CRITICAL AREAS STUDY AND CONCEPTUAL MITIGATION PLAN

ISSAQUAH GATEWAY SENIOR HOUSING ISSAQUAH, WASHINGTON

Prepared For: THE WOLFF COMPANY

Prepared By: TALASAEA CONSULTANTS, INC.

Critical Areas Study and Conceptual Mitigation Plan

Issaquah Gateway Senior Housing Issaquah, Washington

Prepared For:
Mr. Greg Van Patten
The Wolff Company
6710 East Camelback Road
Suite 100
Scottsdale, Arizona 85251

Prepared By:
Talasaea Consultants, Inc.
15020 Bear Creek Road NE
Woodinville, Washington 98077
(425) 861-7550

EXECUTIVE SUMMARY

PROJECT NAME: Issaquah Gateway Senior Housing

CLIENT: The Wolff Company, Mr. Greg Van Patten

SITE LOCATION: The Issaquah Gateway Senior Housing property is located at 2450 Newport Way NW

in the City of Issaquah, Washington. The property consists of portions of two (2) parcels (King County APNs 202406-9063-07 and 202406-9058-04) and was previously part of a larger assemblage of parcels known collectively as "Mull Farm". A lot line adjustment (LLA), separating the Senior site from the remainder of the Mull

A lot line adjustment (LLA), separating the Senior site from the remainder of the Mull Farm, is currently under review. The Senior site is approximately 6 acres, located on Newport Way NW, and is bounded on the east by Schneider Creek and the north by the I-90 corridor. The Public Land Survey System location of the property is the SW

1/4 of Section 20, Township 24N, Range 6E, Willamette Meridian.

PROJECT STAFF: Bill Shiels, Principal; Ann Olsen, Senior Project Manager; David R. Teesdale, PWS,

Senior Wetland Ecologist, Olin Anderson; Senior Landscape Planner.

FIELD SURVEY: Talasaea Consultants has evaluated the Site on several occasions over the last

fourteen years including: 19 September 2000, 5 through 29 April 2008, 3, 10, and 17 July 2013, 1 August 2013, 1 March through 11 April 2014, 3 March through 7 April

2015, and 1 July 2015.

<u>PROJECT HISTORY:</u> The Mull Farm has been the subject of several environmental studies over the past 14 years. A summary of the environmental study history of the Mull Farm is provided in the *Critical Areas Study and Detailed Conceptual Mitigation Plan, dated 24 November 2014 (revised 14 July 2015)* prepared by Talasaea Consultants for the proposed Issaquah Gateway Apartments development. Detailed design for the Issaquah Gateway Apartments project will occur under a separate permitting effort. This report will only provide information related to the Senior Housing project.

<u>DETERMINATION</u>: Talasaea Consultants identified one (1) stream on the Issaquah Senior Housing property, Schneider Creek – Class 2s (Type F). No wetlands were identified within the Project Area.

<u>VEGETATION:</u> Upland buffer vegetation on the Site is currently maintained as hay field and is annually mowed. Species present in the pasture include reed canarygrass, fescue grasses, bentgrasses, and bluegrasses.

<u>HYDROLOGY:</u> Schneider Creek flows across the project area from south to north before entering Lake Sammamish on the north side of Interstate 90.

<u>PROJECT DESCRIPTION:</u> The Issaquah Gateway Senior Housing development consists of a single 5 story building with 146 residential units and associated services for a senior living facility. There will be 110 parking stalls, including 78 surface stalls and 32 located within a parking structure below the housing units. The building will consist of two wings whose axes run parallel to the site contours and step with the slope. The north wing is designed to be four stories of senior residential units over a single story parking structure. The south wing will consist of five stories of senior residential units. The wings are connected by a community center including the lobby, dining, exercise facilities, and support spaces.

Vehicular access from Newport Way descends to a drop off area at the west main building entrance, then continues around the building to the primary parking area along the east side of the building, including a secondary building entry and parking garage access. An accessible ramp provides pedestrian access to the Site, arriving at an entry plaza for both pedestrians and motorists located prominently at the center of the street-facing building façade.

In addition, and at the request of the City, a pedestrian connection is being depicted that will provide access between the Senior Housing project and the Gateway Apartments development to the east. The proposed route will be elevated to span Schneider Creek. No impacts to Schneider Creek are proposed. The trail will be twelve feet wide and will be paved to allow travel by the seniors between the two sites in order to access the public open space and the shared-use regional trail on the Gateway Apartments site.

ASSESSMENT OF DEVELOPMENT IMPACTS: The proposed site plan has been designed to minimize impacts to the critical areas on the project site to the extent possible while conforming to City of Issaquah

requirements and regulations for the *Central Issaquah Development and Design Standards (CIDDS)*. There will be no direct impacts to Schneider Creek resulting from the proposed site development. However, buffer reduction with enhancement and buffer averaging are being proposed for the Schneider Creek buffer. In addition, some minor temporary buffer impacts will result from utility line construction, connections and grading. These minor impacts are unavoidable due to site constraints from critical areas, zoning density requirements of the City, and pedestrian circulation requirements. The proposed impacts are discussed below:

<u>Buffer Reduction:</u> The project will reduce the 100-ft standard stream buffer to 75 feet, an allowed 25% reduction. Full enhancement of the remaining approximately 53,024 square feet (sf) of the Schneider Creek buffer is proposed as mitigation.

<u>Buffer Averaging:</u> The project will reduce approximately 3,806 sf of the buffer for Schneider Creek for the construction of the pedestrian connection between the Issaquah Gateway Senior Housing project and the Issaquah Gateway Apartment development, as well as the soft-surface trail within the stream buffer on the east side of Schneider Creek. Replacement buffer area will be provided at a minimum 1:1 impact-to-replacement ratio, for a total of approximately 4,630 sf of stream buffer. All replacement buffer areas will be fully enhanced.

<u>Temporary Construction Impacts:</u> Some minor disturbances will occur in the critical area buffers due to required utility installation and grading. In addition, discharge of treated stormwater will be routed to a dispersion structure located in the Schneider Creek buffer. Total construction related impacts to buffers is 1.890 sf.

<u>PROPOSED MITIGATION:</u> Mitigation for project impacts will include buffer enhancement in conjunction with buffer reduction, buffer averaging for trails on both sites, and temporary construction related impacts. The proposed mitigation includes:

- Provide 4,630 sf of replacement stream buffer area for the on and off site trails (1:1 replacement ratio).
- Restore 1,890 sf of buffer areas temporarily impacted by utility construction.
- Enhance 53.024 sf of the Schneider Creek buffer.

Buffer areas temporarily impacted by construction of utilities and grading will be fully restored following construction. Restoration measures will include restoring soils by replacing with stripped and stockpiled peat, stabilizing all bare-soil areas with 3 inches of bark mulch, and replanting with a variety of native evergreen and deciduous trees and shrubs.

The Schneider Creek buffer will be significantly enhanced to provide an improved condition over existing conditions. We are proposing to build a naturalistic varying topography within the stream buffer along the left bank of the creek. Good quality peat, excavated from the Site development footprint, will be used as topsoil for the creek buffer. Large woody debris will be placed in the buffer including snags, buried rootwads, stumps and down logs. The buffer will be planted with a mix of native evergreen and deciduous trees, shrubs and groundcovers. Bare soils will be mulched. We anticipate that by raising the existing grades along the creek, we will shorten the time it will take before the planted trees can provide shade for Schneider Creek. The shade provided by the new vegetation will help maintain cool water temperatures and supply needed cover for any fish within the stream. Additionally, the new stream buffer vegetation will provide organic input necessary for a healthy aquatic macroinvertebrate population, which, in turn, helps support juvenile and adult fish populations. The macroinvertebrate population of a stream is an indicator of general stream health and its ability to support fish, including anadromous fish.

<u>Critical Area Fence and Signs:</u> All post-construction critical areas will be placed in native growth protection area easement. A split-rail or similar style fence will be installed at the outer edge of the buffer areas and critical area signs will be installed at intervals determined by the City.

<u>Long-term Maintenance:</u> Per IMC §18.10.805 all regulated features, including Schneider Creek, located on the Site to be developed shall be maintained in perpetuity by the property owner.

<u>Performance Bond:</u> A performance bond equal to one hundred fifty (150) percent of the total cost of the mitigation project to complete, or other security instrument which guarantees that all required mitigation measures will be completed, shall be posted.

TABLE OF CONTENTS

Table of Conte	nmaryentss, Photos, Tables & Appendicess	iii
Chapter 1. 1.1 1.2	Introduction	1 1
Chapter 2. 2.1 2.2	General Property Description and Land Use Project Location General Property Description	2
Chapter 3. 3.1 3.2	Methodology Background Data Reviewed Field Investigation	2
Chapter 4. 4.1. 4.1.1 4.1.2 4.1.3 4.1.4 4.1.5 4.1.6 4.2 4.2.1 4.2.2 4.2.3	Results	3 3 4 4 4 4 5
Chapter 5. 5.1 5.2	Regulatory Review	10
Chapter 6. 6.1 6.2 6.3 6.3.1 6.3.2 6.3.3 6.3.4	Proposed Development	12 13 .13 .14
Chapter 7. 7.1 7.2 7.2.1 7.2.2 7.2.3 7.2.4 7.3 7.3.1 7.3.2 7.3.3 7.3.4	Proposed Mitigation Plan City of Issaquah Policies and Guidance Proposed Mitigation Buffer Replacement Buffer Restoration Schneider Creek Buffer Enhancement Critical Area Fence & Signs Mitigation Design Elements Hydrological Support Grading & Mulch Habitat Features Plantings	16 .16 .16 .16 .17 .17 .17
7.3.3 7.3.4	Habitat FeaturesPlantings	

7.3.5	Temporary Irrigation System	17
7.4	Mitigation Goals, Objectives, and Performance Standards	18
7.5	Functional Value Analysis of the Schneider Creek Buffer	18
Chapter 8.	Construction Management	20
8.1	Mitigation Construction Sequencing	20
8.2	Post-Construction Approval	20
8.3	Post-Construction Assessment	
Chapter 9.	Monitoring Plan	20
9.1	Monitoring Schedule	
9.2	Monitoring Reports	
9.3	Monitoring Methods	
9.3.1	Methods for Monitoring Vegetation Establishment	
9.3.2	Photo Documentation	22
9.3.3	Wildlife	22
9.3.4	Water Quality	22
9.3.5	Site Stability	22
Chapter 10.	Maintenance and Contingency	22
Chapter 11.	Long-Term maintenance	23
Chapter 12.	Performance Bond	24
Chapter 13.	Summary	24
Chapter 14.	References	25

LIST OF FIGURES

Figure 1:	Vicinity Map and Driving Directions
Figure 2:	USFWS National Wetland Inventory
Figure 3:	NRCS Soils Map – King County Area
Figure 4:	FEMA 100-Year Floodplain Map
Figure 5:	Existing Conditions Plan
Figure 6:	Schneider Creek Potential Fish Habitat Map

Note: All figures are located at the end of the report before the appendices.

LIST OF PHOTOS

	LIST OF FHOTOS	
Photo 1.	Schneider Creek in I-90 culvert.	5
Photo 2.	WSDOT NGPA easement within forested area.	6
	Steel plate over Schneider Creek	
P11010 4.	Schlieder Greek buller along 1-90.	С
	LIST OF TABLES	
Table 1.	Functional Value Analysis - Existing Buffer Condition	9
Table 2.	Summary of Proposed Mitigation Measure 1 Options	11
Table 3.	Summary of Development Impacts within Schneider Creek Buffer	13
Table 4.	Functional Value Analysis – Post-mitigation Condition	18
Table 5.	Projected Schedule for Performance Monitoring and Maintenance Events	21
	APPENDICES	
Appendi	x A: Conceptual Mitigation Plans (Large Format 22" x 34") Sheet W1.0. Existing Conditions Plan	
	Shoot W1.1. Proposed Site Plan Impacts & Mitigation Overview Plan	

Sheet W1.1. Proposed Site Plan, Impacts & Mitigation Overview Plan

Sheet W2.0. Preliminary Grading Plan & Section

Sheet W2.1. Grading Details

Sheet W2.2. Preliminary Grading Specifications

Sheet W3.0. Candidate Plant List, Planting Typicals, Notes & Details

CHAPTER 1. INTRODUCTION

1.1 Document Purpose

This report is the result of a critical areas investigation for the Issaquah Gateway Senior Housing property located off Newport Way NW in Issaquah, Washington (**Figure 1**). The property consists of portions of two (2) parcels (King County APNs 202406-9063-07 and 202406-9058-04), and was previously part of a larger assemblage of parcels known collectively as "Mull Farm". A lot line adjustment (LLA), separating the Senior site from the remainder of the Mull Farm, is currently under review.

The Mull Farm has been the subject of several environmental studies over the past 14 years. A summary of the environmental study history of the Mull Farm is provided in the *Critical Areas Study and Detailed Conceptual Mitigation Plan, dated 24 November 2014 (revised 14 July 2015)* prepared by Talasaea Consultants for the proposed Issaquah Gateway Apartments development. Detailed design for the Issaquah Gateway Apartments project will occur under a separate permitting effort. This report will only provide information related to the Senior Housing project.

The Issaquah Gateway Senior Housing property (referred to as "Site" or "Project Site" hereinafter) is the location of a proposed single 5 story building with 146 residential units and associated services for a senior living facility.

The purpose of this report is to:

- Identify, categorize, and describe existing conditions, such as wetlands, streams, or other critical habitats and their respective buffers located on and adjacent to the project site;
- Analyze potential impacts to critical areas resulting from the proposed development; and,
- 3) Describe a mitigation plan to offset impacts to critical areas or their buffers.

The report has been prepared to comply with the reporting requirements of Issaquah Municipal Code (IMC) §18.10.410. This report will provide and describe the following information:

- General property description;
- · Methodology for critical areas investigation;
- Results of critical areas background review and field investigations;
- Regulatory review;
- Description of the proposed project;
- Assessment of project impacts to critical areas;
- Proposed mitigation plan;
- Monitoring plan, maintenance and contingency plan;
- Long-term maintenance; and
- Performance bond

1.2 Statement of Accuracy

Stream and wetland characterizations and ratings were conducted by trained professionals at Talasaea Consultants, Inc., and adhered to the protocols, guidelines, and generally accepted industry standards available at the time the work was performed. The conclusions in this report are based on the results of analyses performed by Talasaea Consultants and represent our best professional judgment. To that extent and within the limitation of project scope and budget, we believe the information provided herein is accurate and true to the best of our knowledge. Talasaea Consultants does not warrant any assumptions or conclusions not expressly made in this report, or based on information or analyses other than what is included herein.

CHAPTER 2. GENERAL PROPERTY DESCRIPTION AND LAND USE

2.1 Project Location

The Issaquah Gateway property is located off Newport Way NW in the City of Issaquah, Washington (**Figure 1**). The property consists of portions of two (2) parcels (King County APNs 202406-9063-07 and 202406-9058-04), approximately six (6) acres in size, that were previously part of a larger assemblage of parcels known collectively as "Mull Farm". A lot line adjustment (LLA) is in progress to separate the portions of the lots on either side of Schneider Creek and join the areas west of Schneider Creek into a single parcel. The Public Land Survey System location of the property is the SW ¼ of Section 20, Township 24N, Range 6E, Willamette Meridian.

2.2 General Property Description

The Site can be accessed by an existing gravel driveway off of Newport Way NW that provides service to an existing unoccupied residence on King County APN 202406-9058-04. The remainder of this parcel and the associated parcel to the north are maintained as pasture and remain undeveloped. The terrain initially slopes steeply down from Newport Way before transitioning to a gentler slope down to Schneider Creek.

The Site is bounded to the north by I-90, to the west by Newport Way NW, to the south by a veterinary practice and a Washington Department of Transportation (WSDOT) mitigation easement, and to the east by Schneider Creek and the proposed Issaquah Gateway Apartments development.

CHAPTER 3. METHODOLOGY

The critical areas analysis of the Site involved a two-part effort. The first part consisted of a preliminary assessment of the Site and the immediate surrounding area using published environmental information. This information included:

- 1) Wetland, soils, and wildlife information from resource agencies;
- 2) Critical areas map information from the City of Issaguah;
- 3) Orthophotography;
- 4) LIDAR terrain data; and,
- 5) Relevant studies completed or ongoing in the vicinity of the site.

The second part consisted of a site investigation where direct observations and measurements of existing environmental conditions were made. Observations included plant communities, soils, and hydrology. This information was used to help characterize the existing conditions of the property, and to identify and delineate critical areas (See **Section 3.2 – Field Investigation** below).

3.1 Background Data Reviewed

Background data reviewed included the following sources:

- US Fish and Wildlife Service (USFWS) Wetlands Online Mapper (National Wetlands Inventory (http://www.fws.gov/wetlands/Data/Mapper.html);
- Natural Resources Conservation Service (NRCS) Web Soil Survey (www.websoilsurvey.nrcs.usda.gov/app/);
- City of Issaguah Critical Areas Maps and Stream Assessment Documentation:
- City of Issaguah Critical Areas Code;
- King County, Lake Sammamish Kokanee Work Group;
- StreamNet database, 2015 (www.streamnet.org);
- SalmonScape database, 2015
 (www.wdfw.wa.gov/mapping/salmonscape/databases);

- State of Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) database(http://wdfw.wa.gov/mapping/phs/);;
- Orthophotography from Earth Explorer (earthexplorer.usgs.gov), NETR Online
 Historic Aerials (www.historicaerials.com), and LIDAR information from the Puget
 Sound LIDAR Consortium (pugetsoundlidar.ess.washington.edu).

3.2 Field Investigation

Talasaea Consultants has evaluated the Site on multiple occasions over the last fourteen years. During these site evaluations, the numbers of plant species present, patterns and characteristics of soils, and presence of hydrologic indicators were noted. Any potential wetlands were identified using the routine methodology described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, Version 2.0*(U.S. Army Corps of Engineers, 2010). The ordinary high water mark (OWHM) for streams was determined and delineated using the methodology described by Washington State Department of Ecology's "*Determining the Ordinary High Water Mark on Streams in Washington State*". (Olson and Stockdale 2008).

Plant species were identified according to the taxonomy of Hitchcock and Cronquist (Hitchcock, 1973). Taxonomic names were updated and plant wetland status assigned according to the *North American Digital Flora: National Wetland Plant List, Version 2.4.0*(Lichvar, 2012). Wetland classes were determined with the U.S. Fish and Wildlife Service's system of wetland classification (Cowardin, et al. 1979). Vegetation was considered hydrophytic if greater than 50% of the dominant plant species had a wetland indicator status of facultative or wetter (i.e., facultative, facultative wetland, or obligate wetland).

Wetland hydrology was determined based on the presence of hydrologic indicators listed in the Corps' Regional Supplement. These indicators are separated into Primary Indicators and Secondary Indicators. To confirm the presence of wetland hydrology, one Primary Indicator or two Secondary Indicators must be demonstrated. Indicators of wetland hydrology may include, but are not necessarily limited to: drainage patterns, drift lines, sediment deposition, watermarks, stream gauge data and flood predictions, historical records, visual observation of saturated soils, and visual observation of inundation.

Soils were considered hydric if one or more of the hydric indicators listed in the Corps' Regional Supplement are present. Indicators include presence of organic soils, reduced, depleted, or gleyed soils, or redoximorphic features in association with reduced soils.

CHAPTER 4. RESULTS

4.1 Analysis of Existing Information

This section describes the results of our in-house research and field investigations. For the purpose of this report, the term "vicinity" describes an area approximately ¼ mile around the Project Site.

4.1.1 National Wetlands Inventory (Issaquah Quadrangle)

The NWI Wetlands Inventory map(U.S. Fish and Wildlife Service, 2015) shows one palustrine scrub-shrub wetland that is seasonally flooded (PSSC) on the Issaquah Gateway Senior Housing property that extends across both sides of Schneider Creek (**Figure 2**). The PSSC wetland continues north of I-90. A palustrine emergent wetland that is temporarily flooded (PEMA) is also mapped north of I-90 in association with the PSSC wetland.

4.1.2 Natural Resources Conservation Service Soils Data

The NRCS Web Soil Mapper (Soil Survey Staff, Natural Resources Conservation Service, 2015) identifies two (2) soil types on the Site, Kitsap silt loam, 2 to 8% slopes, and Bellingham silt loam (**Figure 3**). The Kitsap series is made up of moderately well drained soils that formed in

lacustrine deposits, under a cover of conifers and shrubs, and are typically located on terraces. Bellingham silt loam is a poorly drained soil typically found in depressions that formed in alluvium sediment.

Bellingham silt loam is listed as a hydric soil by the National Technical Committee on Hydric Soils (Soil Survey Staff, Natural Resources Conservation Service, 2015). Kitsap silt loam, 2 to 8% slopes is listed as containing hydric inclusions, which means that the parent soil of the map unit is typically not hydric, but contains varying sized inclusions of hydric soils comprising some fraction of the map unit.

4.1.3 City of Issaquah Critical Areas Information

The City of Issaquah on-line GIS viewer does not have any data concerning wetlands, but does show Schneider Creek (**Figure 4**). Schneider Creek is rated as a City of Issaquah Class 2s (salmonid-bearing). This rating is confirmed by visual sightings of cutthroat trout in the creek by scientists from The Watershed Company (2007) and visual sightings of fish (not identified to genera) by Talasaea Consultants (2013, 2014, and 2015). Schneider Creek also satisfies the criteria as a Type F water under the permanent water typing rule (WAC 222-16-030).

4.1.4 WDFW Priority Habitats and Species

WDFW's Priority Habitat and Species (PHS) (Washington Department of Fish & Wildlife, 2015)online mapping program shows the site is in the range of a Townsend's big-eared bat (*Corynorhinus townsendii*) communal roost area. Townsend's big-eared bat is a Federal Species of Concern. Townsend's big-eared bat typically roosts in caves, mines, hollow trees, and built structures (Woodruff, 2005). The nearest mines are remnant coal mine operations located approximately 3 miles away to the south and southwest. No hollow trees were observed on the Site. There are several built structures on the Site; however, Townsend's bigeared bats are not known to be present in the built structures.

Townsend's big-eared bat is a Federal Species of Concern and a State Candidate for listing. The PHS area for Townsend's big-eared bat is very large and encompasses a six square mile area including most of the City of Issaquah and the southern ½ of the City of Sammamish. If discovered, appropriate measures would be taken to exclude bats from the structures prior to demolition. The proposed development will have *no effect* on Townsend's big-eared bat.

The PHS online map also shows one (1) wetland on the Site associated with Schneider Creek. Schneider Creek is mapped but not labeled by PHS, StreamNet, or SalmonScape, and thus these databases contain no information concerning fish usage of the stream. Talasaea staff documented the presence of cutthroat trout in Schneider Creek.

4.1.5 King County, Lake Sammamish Kokanee Work Group

The Lake Sammamish Kokanee Work Group identified Schneider Creek in their 2014 report as providing spawning habitat for Lake Sammamish kokanee in an approximately 175-foot reach north of West Lake Sammamish Parkway (Lake Sammamish Kokanee Work Group, 2014).

4.1.6 StreamNet and SalmonScape Databases

SalmonScape and StreamNet map Schneider Creek as an ephemeral or intermittent creek. Neither service provides information concerning fish usage of Schneider Creek

4.2 Analysis of Existing Site Conditions

Talasaea Consultants identified no wetlands and one (1) stream on the Senior Site (**Figure 5** and **Appendix A**). No evidence of a wetland consistent with the NWI mapped wetland were found within the Site. The ordinary high water mark (OHWM) for Schneider Creek was initially identified and delineated by John Comis in 2007 (John Comis Associates, Inc., 2007). Talasaea reviewed and agreed with the OHWM delineation, based on DOE guidance (Olson, 2008). The City of Issaquah's outside environmental consultant, Sarah Cooke, has reviewed and verified site critical areas in June 2015. This on-site feature is described in the following section.

4.2.1 Schneider Creek

Schneider Creek is a small fish-bearing stream that has its headwaters in the hills southwest of Issaquah, Washington (**Figure 6**). The stream originates in a portion of unincorporated King County between SE 60th Street and SE 62nd Place. It flows through a wooded ravine for approximately 3,000 feet to a 2.5-foot-diameter round concrete culvert under Newport Way NW. The outfall of this culvert is perched by approximately two feet and represents a total barrier to fish migration. From Newport Way NW, the creek flows in a northerly direction to the north property boundary. It exits the property near the northeast corner of the Site. Schneider Creek then flows in a northwesterly direction for approximately 430 feet to a 3.5-foot-diameter corrugated metal culvert under I-90 and West Lake Sammamish Parkway (**Photo 1**). After passing under I-90 and West Lake Sammamish Parkway, Schneider Creek flows in a northwesterly direction for approximately 650 feet to Lake Sammamish. Schneider Creek drains a basin approximately 155 acres in size that is upgradient from the Site.



Photo 1. Schneider Creek in I-90 culvert.

Photo is viewing south from the entrance of the culvert under I-90 and West Lake Sammamish Parkway. There appears to be no blockage in the culvert that might preclude or limit migration of fish.

Approximately 900 feet of Schneider Creek flows through the Project Site. Approximately 480 feet of the channel resides within an existing WSDOT NGPA easement located southeast of the Site (**Photo 2**). The width of the channel across the Site from the I-90/West Lake Sammamish Culvert up to the WSDOT NGPA area averages approximately six feet. A steel plate provides access across the creek for agricultural activities (**Photo 3**). The Schneider Creek stream bed across the Site consists predominantly of gravel and sand. The stream channel lacks large woody debris up to the WSDOT NGPA area.

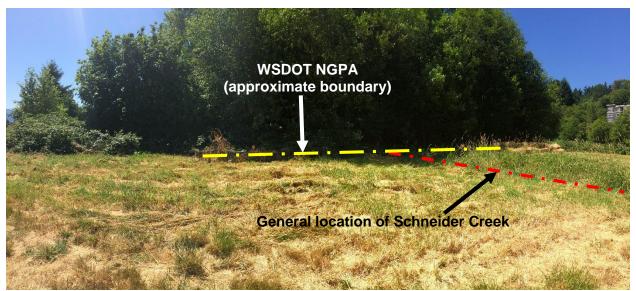


Photo 2. WSDOT NGPA easement within forested area. Photo is viewing to the south-southwest.



Photo 3. Steel plate over Schneider Creek. Photo is viewing to the west.

Schneider Creek Fish Usage

The culvert under I-90/West Lake Sammamish Parkway was initially evaluated by Parametrix (2003) as being impassible by fish¹. Later studies by the Watershed Company (2007)² and King County (2014)³ determined that the culvert was likely fish passible. The presence of salmonids was confirmed by the Watershed Company in 2007 through electro-fish sampling. All of the fish caught and identified by the Watershed Company consisted of cutthroat trout. The Watershed Company further posited that the cutthroat trout were not an isolated population and that it was likely that cutthroat trout from the north side of I-90 could easily migrate onto the Site. Finally,

¹Parametrix. 2003. Stream Inventory and Habitat Evaluation Report Including Issaquah Creek, East and North Forks of Issaquah Creek, Tibbett's Creek, and the Shoreline of Lake Sammamish.

² The Watershed Company. 2007. Schneider Creek Stream and Buffer Enhancement Plan.

³ Lake Sammamish Kokanee Work Group. 2014. *Blueprint for the Restoration and Enhancement of Lake Sammamish Kokanee Tributaries*. King County, Washington

the Watershed Company posited the possibility of coho salmon also being able to access Schneider Creek on the Site, although no evidence of coho presence was provided in their report.

King County produced a study in 2014 of Lake Sammamish Kokanee and the potential for restoration and enhancement of kokanee-supporting tributaries to Lake Sammamish. The report ranked tributary streams to Lake Sammamish using a four tier system. Category 1 streams are those streams that are known to support kokanee spawning and likely have significant restoration and enhancement potential. Category 2 streams are those streams that are not known to currently support large numbers of spawning kokanee, but have the potential to support much larger runs. Category 3 streams are smaller, secondary streams that have some limited spawning of kokanee. Lastly, Category 4 streams are smaller streams that do not have any recent information on kokanee spawning and may provide limited potential for restoration or enhancement. Schneider Creek is listed as a Category 3 stream due to observed kokanee spawning within an approximately 175-foot reach downstream of the I-90/West Lake Sammamish Parkway culvert. The report posits that kokanee might be able to spawn upstream of the I-90/West Lake Sammamish Parkway culvert, but provides no evidence of any such spawning. The report does not provide any timeframe for further stream evaluation or propose any restoration or enhancement work.

We reviewed the existing stream conditions first in 2013 and again in 2015 and noted the presence of fish from the upstream end of the I-90/West Lake Sammamish Parkway culvert upstream to the WSDOT NGPA area. The fish ranged in size from fry to fingerlings (approximately 3 to 5 inches long). We were not able to determine the species of the fish observed, but were able to determine that they were salmonids based on shape and behavior. The fingerlings were likely cutthroat trout and the fry were likely coho salmon.

We evaluated the potential for Schneider Creek to provide fish habitat upstream of the Newport Way NW culvert using LIDAR terrain data and the general description of streams providing fish habitat as presented in the Interim Water Typing Rule (WAC 222-16-031). This rule defines streams providing fish habitat as those waters that are greater than two feet wide at the ordinary high water mark and having a gradient between 16 and 20 percent with a contributing basin greater than 50 acres (Western Washington only). We used LIDAR data within a GIS program to determine the likely flow path of Schneider Creek from its headwaters downstream to Lake Sammamish (**Figure 6**). Elevation data from LIDAR were transferred to node locations on a line representing the flow path of Schneider Creek. The line was then exploded into discrete segments at the node points. Line segment length and node point elevations were exported to a spreadsheet. Percent slope of the stream over approximately 100-foot lengths of the stream were then computed. This information was then used to determine the reaches of Schneider Creek that likely provide fish habitat potential per the Interim Water Typing Rule.

We were able to determine from our spreadsheet analysis of stream gradient that Schneider Creek likely provides fish habitat (slope over 100-foot reach was less than 16 percent) from the Newport Way NW culvert to a point approximately 1,590 feet further upstream. For the purposes of this report, this 1,590-foot reach will be called the Fish Habitat Zone. An approximately 260-foot reach upstream of the start of the Fish Habitat Zone may potentially provide fish habitat (slopes ranged from approximately 8 percent to 17 percent with the 17-percent slope at the downstream end of the reach and approximately 15-percent slope at the upstream end of the reach). Upstream of this 260-foot reach, the slope per 100-foot reach exceeded 20 percent (maximum slope over 100 feet was approximately 50 percent) and was determined as not providing fish habitat (No Fish Habitat Zone). The length of the No Fish Habitat Zone to the approximate headwaters for Schneider Creek is approximately 1,200 feet.

Schneider Creek Classification

Schneider Creek is identified on the City of Issaquah stream maps as a DNR Type 3 stream (fish-bearing). The Watershed Company (2007) and Talasaea (2013 and 2015) visually confirmed the existence of fish in the reach of Schneider Creek on the Site. Based on our understanding of IMC §18.10.780, Schneider Creek satisfies the requirements for characterization as a "Class 2 Stream with Salmonids" (presence of cutthroat trout, a salmonid, is presumed). It may be possible that other salmonids (coho or kokanee) may also be able to access the site. However, based on the gradient of the stream, the current channel morphology, and lack of pools, limits the ability of Schneider Creek between the property's northern boundary and the WSDOT NGPA area to provide winter rearing or refuge habitat for anadromous fish. Class 2 Streams with Salmonids have a 100-foot standard buffer (IMC §18.10.785(C)). An additional 15-foot building setback is also required from the outer edge of the stream buffer (IMC §18.10.785(F)).

4.2.2 Buffers

Buffer vegetation for Schneider Creek is currently maintained as pasture and is annually mowed for hay. Species present in the pasture include fescue grasses (*Festuca* sp.), bentgrasses (*Agrostis* sp.), bluegrasses (*Poa* sp.), orchard grass (*Dactylis glomerata*), and others. Reed canarygrass (*Phalaris arundinacea*) was the dominant grass along the north property boundary and was identified in scattered patches throughout the remainder of the Site. The buffer for Schneider Creek is also contains a large patch of blackberry is located along the northwest buffer adjacent to I-90 (**Photo 4**).



Photo 4. Schneider Creek buffer along I-90. Photo is viewing west from the left bank of Schneider Creek.

4.2.3 Functional Value Analysis of the Schneider Creek Riparian Buffer

There are currently no standard methodologies for assessing buffer function. However, we have extensively reviewed scientific literature on buffers and have developed a qualitative methodology for assessing their functions and services with respect to riparian critical areas. The functions assessed include Shade/Temperature Control, Woody Debris Recruitment, Water Quality Improvement, Hydrologic Functions, and Habitat Value (**Table 1**). Only the portion of the riparian buffer within the development footprint was assessed.

Table 1.	Functional	Value Ana	lvsis -	Existing	Buffer	Condition
I abic I.	i allotioliai	Value Alla	1 4 3 1 3	LAISHIIM	Duilei	COHARDI

Function	Shade/ Temperature Regulation	Woody Debris Recruitment	Water Quality Improvement	Hydrologic Functions	Habitat Value
Existing Conditions (Rating & Explanation for Rating)	Moderate Low: The buffer for the onsite reach of Schneider Creek lacks shrub or tree canopy coverage. The major vegetative coverage is provided by grasses that are frequently mowed.	Low: The major vegetative coverage for Schneider Creek is grass. There is no opportunity to recruit woody debris onsite and south of the I-90 right-ofway.	Moderate: The major vegetative coverage of the Schneider Creek buffer is grass that is frequently mowed andthe ability of the mowed grass to provide water quality improvement is limited. However, the buffer is free from surrounding development that might discharge polluted water to the stream.	Moderate Low: The buffer for Schneider Creek is free of surrounding development. However, the site has been extensively drained. The ability of the buffer to provide hydrologic functions, which normally would likely have been moderate high are attenuated by the existing site drainage system.	Low to Moderate Low: The onsite portion of the Schneider Creek buffer that provides significant habitat value is located adjacent to the I-90 right- of-way. However, a majority of the onsite portion of the buffer is mowed grass and provides minimal habitat value.

Shade and Temperature Regulation

The shade provided to a stream by a well vegetated buffer is important for maintaining water temperatures below the life tolerance limits of salmonids, particularly threaten or endangered species of salmon. Research has shown that a 40-foot wide band of trees is able to sufficiently shade streams with flows up to 5 cfm in mid-July. Taller trees or trees on slopes provide even more protection. The existing buffer along Schneider Creek lacks shrub or tree canopy coverage over a majority of its length on the Site. We determined that the ability of the existing buffer to provide shading and temperature control within the project area to be **Moderate Low**.

Woody Debris Recruitment

Recruitment of woody debris is vital to maintaining the health of a stream ecosystem. Woody debris provides structural complexity to the riparian system that, in turn, provides habitat for many species of animals. Aquatic macroinvertebrates will cling to and feed off of the woody debris. Subsequently, these aquatic macroinvertebrates become prey items for fish, birds, and mammals. Additionally, larger pieces of woody debris can modify stream bed conditions and provide spawning and rearing habitat for salmonids. Woody debris can prevent excessive stream bed scouring by reducing the energy of water flow, or it can modify the direction of stream flow by creating new channels.

A majority of the onsite portion of the Schneider Creek riparian buffer currently lacks tree or shrub cover that would supply the stream with a source of woody debris, large or small. The forested portion of the buffer adjacent to the I-90 right-of-way does contain a forested component and can provide some woody debris recruitment. Overall, we determined that the ability of the existing buffer to provide woody debris recruitment is **Low**.

Water Quality Improvement

Buffers offer water quality improvement functions that are vital to protecting the health and functioning of wetlands and streams. They do this by "pre-treating" surface water through removal of sediments, nutrients, and sequestration of heavy metals and toxic organics. The factors that provide water quality improvements are the amounts and types of existing buffer vegetation and the width of the buffer itself. Wide and well-vegetated buffers can retain water

over longer periods of time allowing sediments to drop out and sequestration of nutrients, heavy metals, and toxic organics. Wider buffers provide this service at higher levels of efficacy. Buffers generally greater than 100 feet will remove up to 80-percent of sediments. Buffers greater than 300 feet will remove significant levels of nutrients.

The onsite portion of the buffer for Schneider Creek is currently maintained as mowed pasture. This grass, even as mowed stubble, will perform some water quality improvements, namely, the removal of sediments. The ability to remove heavy metals, nutrients, and toxic organic compounds is dependent on the residence time of surface water flowing through the buffer and the ability of the various grass species to sequester these pollutants. However, there appears to be no major sources of these pollutants resulting from the current farming practices. We determined that the ability of the buffer to perform water quality functions is **Moderate**.

Hydrology Functions

Another important function of buffers is to provide hydrologic support to the wetland or stream. Groundwater can exfiltrate from the buffer to the wetland or stream to maintain hydrologic levels (the levels of hydrology under which the wetland or stream formed or is maintained). During times of periodic high water levels, the buffer can act as additional storage for the wetland or stream. Wider, intact buffers areas are able to provide these functions at a higher level than narrower buffers.

The onsite portion of the buffer for Schneider Creek is able to provide some limited hydrologic support to the stream. However, the amount of support it can supply depends on the extent of subsurface drainage tiling on the property. Schneider Creek, as it flows through the managed portion of the pasture, resides within a steep-walled channel that likely does not allow high water to flow out across the existing buffer. Likewise, there are few, if any, depressional areas within the existing buffer that may collect and retain water that could be used to support stream hydrology. We determined that the ability of the existing buffer to provide hydrology functions is **Moderate Low**.

Habitat Value

Between aquatic lands (wetlands, streams, etc.) and upland is a dynamic zone that provides considerable habitat potential for a variety of birds, mammals, amphibians, and insects. Plant species diversity, patterns of vegetation, and structural diversity are important in maintaining high levels of habitat potential for wildlife. Dead or dying trees, snags, and down woody material also provide habitat potential within the buffer.

The majority of the onsite portion of buffer for Schneider Creek is comprised of various grasses and is frequently mowed. There is little opportunity for woody species (trees or shrubs) to become established. The buffer contains no habitat features, such as down woody material, snags, stumps, or other similar structures. A narrow portion of stream buffer for Schneider Creek adjacent to the I-90 right-of-way does have greater species diversity and habitat structure and, therefore, provides significantly better habitat value when compared to the remainder of the onsite portion of the Schneider Creek buffer. We determined that the ability of the existing buffer to provide habitat is **Low to Moderate Low**.

CHAPTER 5. REGULATORY REVIEW

5.1 City of Issaguah Critical Areas Regulations

The proposed project is subject to all applicable regulations set forth in IMC §18.10 Environmental Protection. One (1) stream with its associated buffer is regulated by §18.10 of IMC. No wetlands were identified within the Site. Schneider Creek was classified as a Class 2 stream with salmonids according to IMC §18.10.780, and requires a 100 foot standard buffer according to IMC §18.10.785(C).

Development on sites that have a wetland or wetland buffer shall also incorporate where applicable the performance standards provided in §18.10.660, which are listed below. Despite no wetlands located on-site, the following guidelines are also being applied to the Schneider Creek buffer for this project pursuant to IMC §18.10.790(D)(4)(b)(2).

- A. Lights shall be directed away from the wetland. Lighting levels shall meet the outdoor lighting standards for spillover into critical areas, per IMC §18.07.107;
- B. Activities that generate noise shall be located away from the wetland, or noise impacts shall be minimized through design or insulation techniques;
- C. Toxic runoff from new impervious surface area shall be directed away from wetlands;
- D. Treated stormwater runoff may be allowed into wetland buffers. Channelized flow should be prevented;
- E. Use of pesticides, insecticides and fertilizer within 150 feet of wetland boundary shall be limited and follow best management practices (BMPs); and
- F. The outer edge of the wetland buffer shall be planted with dense vegetation and/or fencing to limit pet and human disturbance.

The project will implement several of the mitigation measures listed above as follows (Table 2):

Table 2. Summary of Proposed Mitigation Measure 1 Options

Examples of Disturbances	Measures to Minimize Impacts
Lights	Street and security lighting will be placed so that illumination is directed away from the stream buffers.
Noise	Planting of dense vegetation specified for mitigation of light-related impacts will also ameliorate impacts due to noise. Commercial compactors and garbage container bays will be located away from the stream buffer areas, or confined within masonry walls.
Toxic Runoff	Operational covenants will stipulate that no pesticides or herbicides will be used within 150 feet of the stream buffer (the use of herbicides to control non-native, invasive species in the course of routine mitigation monitoring and maintenance will be allowed as described in Chapters9 and 11). Road runoff will be collected and transferred to the project's onsite stormwater treatment and detention facilities. No direct discharge of road runoff or untreated stormwater runoff into the stream buffer will be possible.
Stormwater runoff	All road runoff will be detained and cleaned by the proposed stormwater system for the project. Stormwater will be treated using a detention/wet vault in conjunction with a Modular Wetland filter vault before release (see Section 6.2). No undetained or untreated stormwater will be allowed to flow into the stream. Runoff from clean impervious surfaces (rooftops) will be discharged to dispersion structures located in the outer portions of the buffer.
Change in Water Regime	Stormwater release into Schneider Creek will not exceed modeled existing conditions for all storm events up to a 100-year storm. Stormwater release from the detention/wet vault in conjunction with a Modular Wetland filter vault that will be able to regulate the release rate of treated stormwater. This will ensure that the existing water regime is not significantly disrupted by the proposed development.
Pets and Human Disturbances	Buffer areas will be permanently protected by fencing to help prevent human and pet intrusions into the buffer, and the buffer areas (will be placed in a separate Natural Growth Protection Easement (NGPE), per City requirements.

5.2 State and Federal Regulations

Wetlands and streams on the Site are subject to applicable State and Federal regulations. Wetland impacts are regulated at the Federal level by Sections 404 and 401 of the Clean Water Act. The U.S. Army Corps of Engineers (Corps) is responsible for administering compliance with Section 404 via the issuance of Nationwide or Individual Permits for any fill or dredging activities within wetlands under Corps jurisdiction. Any project that is subject to Section 404 permitting is also required to comply with Section 401 Water Quality Certification, which is administered by the Washington State Department of Ecology (DOE). No direct impacts to wetlands or streams are proposed for the current site development plan. Therefore, the project will not need to apply for any Section 404 Nationwide or Individual Permits or Section 401 Water Quality Certification.

Any work within, over, or under the Ordinary High Water Mark of a stream requires a Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW), pursuant to the State Hydraulic Code (Chapter 77.55 RCW).

CHAPTER 6. PROPOSED DEVELOPMENT

6.1 Project Description

The Issaquah Gateway Senior Housing development consists of a single 5 story building with 146 residential units and associated services for a senior living facility (**Sheet W1.1** in **Appendix A**). There will be 110 parking stalls, including 78 surface stalls and 32 located within a parking structure below the housing units. The building will consist of two wings whose axes run parallel to the site contours and step with the slope. The north wing is designed to be four stories of senior residential units over a single story parking structure. The south wing will consist of five stories of senior residential units. The wings are connected by a community center including the lobby, dining, exercise facilities, and support spaces.

Vehicular access from Newport Way descends to a drop off area at the west main building entrance, then continues around the building to the primary parking area along the east side of the building, including a secondary building entry and parking garage access. An accessible ramp provides pedestrian access to the site, arriving at an entry plaza for both pedestrians and motorists located prominently at the center of the street-facing building façade.

In addition, and at the request of the City, a pedestrian connection is being depicted that will provide access between the Senior Housing project and the Gateway Apartments development to the east. The proposed route will be elevated to span Schneider Creek. The trail will be twelve feet wide and will be paved to allow travel by the seniors between the two sites in order to access the public open space and the shared-use regional trail on the Gateway Apartments site. A lot line adjustment (LLA) is being proposed to separate the Issaquah Gateway Senior Housing Project from the Issaquah Gateway Apartments development.

In addition, at the request of the City, a four (4)-foot wide, soft-surface trail will be constructed within the outer 50% of the east side buffer of Schneider Creek on the Issaquah Gateway Apartments Site. This trail will be a recreational amenity for the Issaquah Gateway Apartments that, while being permitted and constructed as part of the Issaquah Gateway Apartments development plan, will be mitigated for within the Issaquah Gateway Senior Housing Site.

6.2 Stormwater Management (provided by Triad)

The City of Issaquah requires that the stormwater management system for the Issaquah Gateway Senior Housing project meet the design criteria in the 2009 King County Surface Water Design Manual (KCSWDM) and the 2011 City of Issaquah Surface Water Design Manual Addendum as adopted by the City of Issaquah (Issaquah Drainage Manual). Stormwater runoff will be conveyed to the stormwater flow control and water quality facilities via curb, gutter, catch basins, and closed piping systems. The proposed pipe system provides sufficient capacity to

convey the 100-year runoff event without overtopping, which satisfies all pipe system requirements of Minimum Requirement #4 of the City of Issaquah Drainage Manual. The flows conveyed to Schneider Creek will be controlled by a single detention vault to reduce the flow durations and peak flows leaving the developed site. This will reduce the potential of erosion in the creek downstream of the project.

The intent of the preliminary stormwater design is to create a uniform drainage path, generally from west to east, to provide safe overflow paths during high rainfall events. Stormwater detention will be provided within a below-grade vault on the northeast side of the Site. This project will satisfy water quality and flow control requirements through the use of one combined water quality and detention vault. Water leaving the vault will be filtered to meet the Sensitive Lake Protection Menu requirements within the KCSWDM. The detention/wet vault in conjunction with a Modular Wetland filter vault will satisfy the Sensitive Lake Protection Menu to protect Schneider Creek and Lake Sammamish. The Modular Wetland filter vault will provide both the removal of up to 50-percent of the total zinc and phosphorus. Stormwater leaving the Modular Wetland filter vault will disperse via a bubble-up catch basin structure.

All work adjacent to the buffer for Schneider Creek will employ erosion control and water quality protection BMPs per an approved Temporary Erosion and Sedimentation Control (TESC) plan and Stormwater Pollution Prevention Plan (SWPPP). Please refer to the Issaquah Gateway Senior Housing Preliminary Technical Information Report prepared by Triad Associates for more information.

6.3 Assessment of Development Impacts

6.3.1 Mitigation Sequencing

Per IMC §18.10.490, mitigation sequencing must be employed on sites containing critical areas to avoid impacting the critical areas to the greatest extent possible, or to minimize impacts if the impacts are unavoidable. The proposed site plan has been designed to minimize impacts to the critical areas on the project site to the extent possible while conforming to City of Issaquah requirements and regulations for the *Central Issaquah Development and Design Standards (CIDDS)*. There will be no direct impacts to Schneider Creek resulting from the proposed site development. However, buffer reduction with enhancement and buffer averaging is being proposed, and some minor temporary buffer impacts will result from utility line construction, connections and grading. These minor impacts are unavoidable due to site constraints from critical areas, zoning density requirements of the City, and pedestrian circulation requirements. The proposed impacts are described in detail in the following sections, and are depicted on **Sheet W1.1** in **Appendix A**.

Table 3. Summary of Development Impacts within Schneider Creek Buffer

Proposed Buffer Impact	Impact (sf)	Proposed Mitigation Type	Proposed Mitigation
Soft-Surface Pedestrian Trail (off-site)	1,760	Buffer Averaging	1,914
Paved Pedestrian Trail (off-site)	1,081	Buffer Averaging	1,624
Paved Pedestrian Bridge (on-site)	965	Buffer Averaging	1,092
Subtotal	3,086		4,630
Temporary Construction/ Utility Impacts	1,890	Buffer Restoration	1,890
Total Buffer Encroachments	4,976		6,520
		Buffer Enhancement	53,024
		Total Buffer Improvements	59,544

6.3.2 Buffer Reduction with Enhancement

A minimum developable area is required in order to accommodate all the required project elements, including buildings, parking, utilities, and open space. This will require that the buffer for Schneider Creek be reduced by 25% from the 100-foot standard buffer to 75-feet along the entire length of the Site to provide the required parking area and vehicular access to the back side of the building, as well as outdoor open space for the senior residents. Enhancement of the remaining stream buffer is required for the buffer reduction to improve water quality and habitat functions, both of which are currently limited given the current condition of the majority of the Schneider Creek buffer.

Pursuant to IMC §18.10.790.D.4 (stream buffers), buffer reduction with buffer vegetation enhancement is allowed if it meets certain requirements. These requirements are listed below, followed by a description (in italics) of how the proposed buffer averaging meets each requirement.

- a. More than forty (40) percent of the buffer area is covered by nonnative and/or invasive plant species; or
 - Just a bit less than 100% of the stream buffer within the Site is comprised of regularly maintained pasture grasses with large sections of Himalayan blackberry near I-90.
- b. Tree and/or shrub vegetation cover less than twenty-five (25) percent of the buffer area; and
 - Tree and shrub vegetation cover is absent over more than 90% of the buffer area.
- c. The stream buffer has slopes of less than twenty-five (25) percent.

The stream buffer is level to nearly level with gentle slopes ranging between 0 to 5%. Steeper slopes occur within the Site closer to I-90 and Newport Way NW, but not within the stream buffer areas.

6.3.3 Buffer Averaging

Buffer averaging was used for the permitting of a required soft-surface trail within the outer 50% of the stream buffer on the east side of Schneider Creek for the Issaquah Gateway Apartment development. Buffer averaging will also be used to offset buffer encroachments for the trail across Schneider Creek that will connect the Gateway Apartments to the Senior Housing Site. Detailed design for the soft-surface trail located with the east side Schneider Creek buffer is provided under a separate permitting effort for the Issaquah Gateway project, and are provided in the Critical Areas Study and Detailed Conceptual Mitigation Plan, dated 24 November 2014 (revised 14 July 2015). These combined trails required that the buffer for Schneider Creek be reduced by a total of 3,806sf. The replacement stream buffer to offset these buffer impacts are provided on the west side of Schneider Creek in conjunction with the stream buffer mitigation for the Issaquah Gateway Senior Housing project, and as such, are included within this report.

Pursuant to IMC §18.10.790.D.6 (stream buffers), buffer averaging is allowed if it meets certain requirements. These requirements were listed and examined within the Critical Areas Study and Detailed Conceptual Mitigation Plan, dated 24 November 2014 (revised 14 July 2015), for the Issaquah Gateway Apartment development. Replacement buffer will be provided beyond the areas identified and required for the Issaquah Gateway Senior Housing Site and will be consistent with the guidelines outlined in IMC §18.10.790.D.6, including:

- a. The proposed site plan demonstrates efforts to avoid and minimize stream and stream buffer impacts;
- b. Buffer width averaging is consistent with the best available science and will not adversely impact functions or values;

- c. The total area within the stream buffer after averaging is no less than the area within the standard buffer prior to averaging. The location of the replacement buffer shall be contiguous with the standard buffer to be averaged.
- d. The buffer width shall not be reduced by more than twenty-five (25) percent of the standard buffer width at any location.
- e. A maximum of fifty (50) percent of the buffer perimeter on a site may be reduced by averaging.
- f. Buffer averaging shall consider physical characteristics on a site, including but not limited to existing buffer vegetation, slopes, floodplain, hydrology, surface drainage and association with nearby streams and wetlands. Buffer averaging shall not be allowed within a designated floodway of streams.
- Buffer averaging credit shall not be allowed in areas already protected by the critical area regulations;
- h. Mitigation, such as revegetation and enhancement of existing vegetation, may be required by the Director.

6.3.4 Temporary Construction Impacts

Some minor disturbances will occur in the critical area buffers due to required utility installation and grading. A total of 1,890 sf of stream buffer will be temporarily impacted. Consistent with IMC §18.10.775, all temporarily disturbed buffer areas will be restored with native trees and shrubs and will provide increased species structure and diversity over existing conditions. Areas of the Site that have been cleared or grubbed shall be restored by planting native trees and shrubs to prevent erosion or re-establishment of invasive species.

In addition, discharge of treated stormwater will be routed to a lateral dispersion trench to spread concentrated flows in the Schneider Creek buffer. The discharge of stormwater into the stream buffer is allowed per IMC §18.10.775.E, which states:

"surface water discharge to streams from detention facilities, pre-settlement ponds or other surface water management structures may be allowed so long as the discharge complies with the provisions of the City's currently adopted Surface Water Design Manual."

The stormwater system has been designed to meet the discharge requirements of the 2009 KCSWDM and the 2011 City of Issaquah Surface Water Design Manual Addendum as adopted by the City of Issaquah (Issaquah Drainage Manual). Based on our review of the TIR provided by Triad Associates for this project, the stormwater model assumed that the predevelopment condition of the site is forested and flat. It should be reiterated that the modeled predevelopment condition of the site (forested and flat) does not correspond with existing predevelopment conditions, which are mowed pasture and slightly sloped. We believe that the modeled predevelopment condition likely underestimates the actual site runoff flow rates. If this supposition is true, then the modeled developed site runoff rates will be even less than runoff rates expected with existing site conditions. Under such a scenario, there should be no appreciable impact to salmonids that might use Schneider Creek for overwintering habitat.

All temporarily disturbed buffer areas will be restored with appropriate native vegetation. Please refer to the Issaquah Gateway Senior Housing Preliminary Technical Information Report prepared by Triad Associates for more information.

CHAPTER 7. PROPOSED MITIGATION PLAN

7.1 City of Issaguah Policies and Guidance

The mitigation proposed for critical areas impacts is in accordance with Issaquah Municipal Code, Chapter 18.10, entitled *Environmental Protection*.

7.2 Proposed Mitigation

Proposed mitigation measures include buffer replacement, buffer restoration, and stream buffer enhancement. Mitigation areas are depicted on **Sheet W1.1**. The proposed mitigation measures include the following and are described in more detail below.

7.2.1 Buffer Replacement

Pursuant to IMC §18.10.790.D.6, replacement buffer area will be provided at a minimum 1:1 impact-to-replacement ratio. For Schneider Creek, approximately 4,630sf of replacement buffer will be provided immediately adjacent to the existing buffer that will result in a net gain of 824 sf of stream buffer area. These areas are provided to compensate for buffer encroachments resulting from the required trails connecting the Issaquah Gateway Apartments and the Issaquah Gateway Senior Housing Sites across Schneider Creek.

7.2.2 Buffer Restoration

Buffer areas temporarily impacted by construction of utilities, grading and the stormwater dispersal structures will be fully restored following construction. Restoration measures will include restoring soils by replacing with stripped and stockpiled peat, stabilizing all bare-soil areas with 3 inches of bark mulch, and replanting with a variety of native evergreen and deciduous trees and shrubs.

7.2.3 Schneider Creek Buffer Enhancement

The Schneider Creek buffer will be significantly enhanced to provide an improved condition over existing conditions. The Schneider Creek buffer is currently devoid of woody vegetation except for within the existing recorded WSDOT NGPA area and along the I-90 portion of the stream. We are proposing to build naturalistic varying topography within the stream buffer area to provide some structural variety along the left bank of the creek (Sheet W2.0). Good quality peat, excavated from the Apartment development footprint, will be used in finish grading of the created topography. Large woody debris will be placed in the buffer including snags, buried rootwads, stumps and down logs to help restore habitat structural diversity. The buffer will be planted with a mix of native evergreen and deciduous trees, shrubs and groundcovers and mulched (Sheet W3.0). We anticipate that by raising the existing grades along the creek, we will shorten the time it will take before the planted trees can provide shade for Schneider Creek. The shade provided by the new vegetation will help maintain cool water temperatures and supply needed cover for any fish within the stream. Additionally, the new stream buffer vegetation will provide organic input necessary for a healthy aquatic macroinvertebrate population, which, in turn, helps support juvenile and adult fish populations. The macroinvertebrate population of a stream is an indicator of general stream health and its ability to support fish, including anadromous fish. As suggested by the City, the inner 50 percent of the buffer will be densely planted in accordance with King County Mitigation Guidelines to support stream functions and the outer 50 percent of the buffer shall be less densely planted to transition to the developed area. Approximately 53,024 sf of currently degraded buffer for Schneider Creek will be enhanced.

7.2.4 Critical Area Fence & Signs

All post-construction critical areas will be placed in native growth protection area easements per IMC §18.10.470. A split-rail or similar style fence will be installed at the outer edge of the buffer areas and critical area signs will be installed at intervals determined by the City.

7.3 Mitigation Design Elements

7.3.1 Hydrological Support

Hydrology for Schneider Creek will be maintained through the discharge of on-site stormwater into Schneider Creek after a period of settling to ensure water quality improvements. Where feasible and practicable, clean rooftop runoff from adjacent buildings will be directed and discharged into the buffer adjacent to Schneider Creek. Final design will be presented in the construction documents.

7.3.2 Grading & Mulch

The Schneider Creek buffer grading will create naturalistic varying topography within the stream buffer area to provide structural variety (**Sheet W2.0**). Existing peat, excavated from the Apartments site will be used as topsoil over the graded areas. Three inches of bark mulch shall be placed over all bare soil buffer areas immediately after grading.

7.3.3 Habitat Features

Snags, buried rootwads, down logs and stumps will be incorporated into the stream buffer mitigation area to provide ecologically important habitat features for wildlife (**Sheet W2.0**). All down woody material shall be coniferous species (western red cedar, Douglas fir, western hemlock, or Sitka spruce) obtained from the project site or imported if necessary.

Snags provide perching, feeding and nesting sites for a variety of native birds. Cavity nesting bird species, such as tree swallows, violet-green swallows, chickadees, and woodpeckers, would be expected to utilize such features. A bird-nesting box will be attached to each created snag to initially augment the natural habitat for swallow species. Buried rootwads will be placed immediately adjacent to the creek. Down logs and stumps provide the slow release of nutrients as the wood decays, and also provide cover for amphibians, small mammals, and other wildlife. Boulders recovered from site excavation (if available) will be placed in small piles throughout the mitigation area. These piles can provide refugia habitat for reptiles and small mammals.

7.3.4 Plantings

A variety of native evergreen and deciduous trees, shrubs, and groundcovers will be used to plant the stream buffer areas. A candidate plant list on **Sheet W3.0** depicts the proposed species. Plant materials will consist of a combination of bare-root and container stock. Plant species were chosen for a variety of qualities, including: adaptation to specific water regimes, value to wildlife, value as a physical or visual barrier, pattern of growth (structural diversity), and aesthetic values. Native tree, shrub, and groundcover species were chosen to increase both the structural and species diversity of the mitigation areas, thereby increasing the value of the mitigation areas to wildlife for food and cover. Planting will be planned to occur during the dormant season (late fall, winter, or early spring) to maximize the chance for successful plant establishment and survival.

7.3.5 Temporary Irrigation System

An above ground temporary irrigation system capable of full head-to-head coverage of all the restored and enhanced buffer areas will be provided. The temporary irrigation system shall either utilize controller and point-of-connection (POC) from the site irrigation system, or shall include a separate POC and controller with a backflow prevention device per water jurisdiction inspection and approval. The system shall be zoned to provide optimal pressure and uniformity of coverage, as well as separation for areas of full sun or shade, and slopes in excess of 5-percent.

The system shall be in operation by June 15 (or at time of planting if later) and winterized by October 15. Irrigation shall be provided for the first 2 years of the monitoring period following installation. The irrigation system shall be programmed to provide ½" of water every three days (one cycle with two start times per week or every three days). A chart describing the location of all installed or open zones and corresponding controller numbers shall be placed inside of the

controller and given to the owner's representative. Prior to release of the bond at the end of the City required 3 year monitoring period, all components of the aboveground temporary irrigation system shall be removed from all of the mitigation areas.

7.4 Mitigation Goals, Objectives, and Performance Standards

The primary goal of the mitigation project is to replace the functions and values lost through development impacts to the critical area buffers. In order to accomplish this goal, the proposed mitigation plan will accomplish the following:

- Provide 4,630 sf of replacement stream buffer area for the on and off site trails (1:1 replacement ratio).
- Restore 1,890 sf of buffer areas temporarily impacted by utility construction.
- Enhance 53,024 sf of the Schneider Creek buffer.

The success of the above mitigation actions will be evaluated based upon specific objectives and performance standards. Objectives and performance standards will be included in the final mitigation plan. Each objective will include one or more measurable performance standards.

7.5 Functional Value Analysis of the Schneider Creek Buffer

We reassessed the functions of the buffer for Schneider Creek based on anticipated conditions of the mitigation at maturity. These results are summarized on **Table 4**.

The proposed buffer enhancement plan for Schneider Creek will remove non-native invasive species (Himalayan and evergreen blackberry, reed canarygrass, etc.). The topography within the buffer will be modified to a naturalistic varying topography within the stream buffer area that will provide visual aesthetics and habitat value while limiting (without totally preventing) the ability of Schneider Creek to naturally meander.

Large woody debris will be anchored into the new buffer topography. We anticipate that these pieces of debris will become incorporated into the stream channel as Schneider Creek naturally meanders within the boundaries defined by the berms. The large woody debris will provide terrestrial habitat within the buffer and will help develop a more natural stream channel for Schneider Creek as they become incorporated into the stream itself.

Table 4. Functional Value Analysis – Post-mitigation Condition

Function	Shade/ Temperature Regulation	Woody Debris Recruitment	Water Quality Improvement	Hydrologic Functions	Habitat Value
Existing Conditions	Moderate Low	Low	Moderate	Moderate Low	Low to Moderate Low
Mitigated Conditions	Moderate high to High: The proposed planting of native trees and shrubs will provide greatly improved shading and temperature control in Schneider Creek.	Moderate high to high: Large woody debris will be incorporated into the mitigated buffer. Additionally, as the trees and shrubs grow and mature, they will naturally support recruitment of woody debris.	Moderate to Moderate High: The mitigated buffer will have the opportunity to provide water quality improvements that the existing buffer does not.	Moderate: The buffer enhancement proposed for Schneider Creek will eventually recreate a "floodplain" within the added topography provided on either side of the creek.	Moderate High to High: Increased plant species diversity, strata, and structural diversity will provide higher habitat value compared to existing conditions.

The buffer will be extensively planted with a variety of native trees and shrubs suitable for use in a riparian buffer area. At maturity, these plants will provide abundant niches for a variety of bird, mammal, and amphibian species, while providing shading and temperature control within

Schneider Creek. This shading will help maintain adequate water temperatures for salmonid spawning and rearing.

A more specific discussion of the post-mitigation buffer functions is discussed below:

Shade and Temperature Regulation

The existing grasses and non-native blackberries within the buffer of Schneider Creek will be removed and replaced with native trees and shrubs. Since Schneider Creek is relatively narrow and somewhat deeply incised, the shading effect will be quickly achieved during the monitoring period and will improve as the buffer plantings approach maturity. Maintaining shade and cool water temperatures through the Site will benefit downstream salmonid resources. We believe that the ability of the post-mitigation buffer to provide shade and temperature regulation will generally increase from the **Moderate Low** rating to a **Moderate** to **Moderate High** rating.

Woody Debris Recruitment

Installation of large woody debris will instantly address the general lack of any woody debris within the Schneider Creek buffer under existing conditions. As the planted trees and shrubs grow and mature, they will naturally provide additional woody debris in the form of leaves, needles, twigs, branches, and even trees. We believe that the ability of the post-mitigation buffer to recruit woody debris will generally increase from a **Low** rating to a **Moderate High** to **High** rating.

Water Quality Improvements

We determined that the Schneider Creek buffer under existing conditions would provide moderate levels of water quality improvement. This determination was based partly on the width of the existing vegetated buffer and the lack of development near Schneider Creek. The proposed buffer enhancement plan will improve the species diversity within the buffer and could take advantage of different species abilities to sequester heavy metals, nutrients, and toxic organic compounds. The biggest difference between existing conditions and the post-development mitigated condition is that the buffer post-development will have the opportunity to actually provide water quality improvements. Additionally, the proposed stormwater treatment system will significantly reduce the level of pollutants in stormwater prior to release into the buffer. We believe that the ability of the post-mitigation buffer to provide water quality improvements will increase from a **Moderate** rating to a **Moderate** to **Moderate High** rating.

Hydrologic Functions

The reach of Schneider Creek on the Site currently flows within a steep-walled channel with little ability to flood overbank. The proposed enhancement of the riparian buffer will create a natural-looking area of elevated topography that will define the future extent of stream meander as Schneider Creek re-establishes a more normal channel (stream bed material and sinuosity). We believe that, at maturity, the enhanced buffer will provide flood storage capacity, which will reduce the potential for bed scour and bank erosion. Therefore, we believe that the ability of the post-mitigation buffer to provide hydrologic functions will increase from **Moderate Low** to **Moderate**.

Habitat Value

The habitat value of the existing buffer is severely limited by current farming practices (mowing and baling of hay). Buffer habitat for the reach of Schneider Creek adjacent to the I-90 right-of-way provides more habitat value because of the presence of trees and shrubs. However, even the forested portion of the buffer is heavily impacted by non-native blackberries and other weedy species, which limits the value of the habitat.

The proposed buffer enhancement plan will remove all non-native weedy species and will replant with a variety of native trees and shrubs. The buffer will be further enhanced by installation of large woody debris and the creation of the berm. At maturity, the enhanced buffer will provide much greater habitat value to various animal species through increased species

diversity, increased habitat features (down logs, stumps, and snags), and greater topographic and structural diversity. We believe that the ability of the post-mitigation buffer to provide habitat will increase from the pre-construction **Low** to **Moderate Low** rating to a **Moderate High** to **High** rating.

CHAPTER 8. CONSTRUCTION MANAGEMENT

8.1 Mitigation Construction Sequencing

The following provides a general sequence of activities anticipated to be necessary to complete this mitigation project. Some of these activities may be conducted concurrently as the project progresses.

- 1. Conduct a site meeting between the contractor, Talasaea Consultants, and the owner's representative to review the project plans.
- 2. Survey clearing limits, flag and protect vegetation to remain.
- 3. Verify, using an independent qualified professional, the limits of clearing per the approved site development plans.
- 4. Install silt fence and any other erosion and sedimentation control BMPs necessary for work in the critical areas (see civil TESC plans).
- 5. Construct project elements per civil plans.
- 6. Clear and grub non-native/invasive vegetation from Schneider Creek buffer.
- 7. Create topography in buffer and install habitat features.
- 8. Place mulch.
- 9. Replant cleared or grubbed areas with native trees and shrubs.
- 10. Complete site cleanup and install plant material.
- 11. Install split-rail fence and critical area signs.
- 12. A survey of the construction limits post-development will be performed by a licensed surveyor and an affidavit submitted to the Director attesting that the construction limits were not exceeded.

8.2 Post-Construction Approval

Talasaea Consultants shall notify the City of Issaquah in writing when the mitigation planting is completed to set up for a final site inspection and subsequent approval. Once final approval is obtained in writing from the City of Issaquah, the monitoring period will begin.

8.3 Post-Construction Assessment

A qualified wetland ecologist/biologist from Talasaea Consultants shall conduct a post-construction assessment after receipt of the post-construction approval from the City of Issaquah. The purpose of this assessment will be to establish baseline conditions at Year 0 of the required monitoring period. A Baseline Assessment Report, which will include as-built drawings, will be submitted to the City. The as-built plan set will depict any field changes to the mitigation plan (planting locations, habitat features, etc.) from the original approved mitigation plan.

CHAPTER 9. MONITORING PLAN

9.1 Monitoring Schedule

Performance monitoring of the mitigation areas will be conducted for a period of five years pursuant to IMC §18.10.500. Monitoring will be conducted according to the schedule presented in **Table 5** below. Monitoring will be performed by a qualified biologist or ecologist.

Year	Date	Maintenance Review	Performance Monitoring	Report Due to City
BA ¹	Winter/Spring	Χ	X	Χ
1	Spring	Χ	X	
ı	Fall	Χ	X	Χ
2	Spring	Χ	X	
	Fall	Χ	X	Χ
3	Spring	Χ		
3	Fall	Χ	X	Χ
4	Spring	Χ		
4	Fall	Χ	X	Χ
5	Spring	Χ		
3	Fall	X	X	X ²

Table 5. Projected Schedule for Performance Monitoring and Maintenance Events

9.2 Monitoring Reports

Each monitoring report will adhere to applicable City requirements. The reports will include: 1) Project Overview, 2) Requirements, 3) Summary Data, 4) Maps and Plans, and 5) Conclusions. If the performance criteria are met, monitoring for the City will cease at the end of year five, unless objectives are met at an earlier date and the City accepts the mitigation project as successfully completed.

9.3 Monitoring Methods

The following monitoring methods will be used to evaluate the approved performance standards.

9.3.1 Methods for Monitoring Vegetation Establishment

Vegetation monitoring methods may include counts; photo-points; random sampling; sampling plots, quadrats, or transects; stem density; visual inspection; and/or other methods deemed appropriate by the City. Vegetation monitoring components shall include general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weed cover.

Permanent vegetation sampling plots, quadrats, and/or transects will be established at selected locations to adequately sample and represent all of the plant communities within the mitigation project areas. The number, exact size, and location of transects, sampling plots, and quadrats will be determined at the time of the baseline assessment.

Percent areal cover of woody vegetation (forested and/or scrub-shrub plant communities) will be evaluated through the use of point-intercept sampling methodology. Using this methodology, a tape will be extended between two permanent markers at each end of an established transect. Trees and shrubs intercepted by the tape will be identified, and the intercept distance recorded. Percent cover by species will then be calculated by adding the intercept distances and expressing them as a total proportion of the tape length.

The established vegetation sampling locations will be monitored and compared to the baseline data during each performance monitoring event to aid in determining the success of plant establishment. Percent survival of shrubs and trees will be evaluated in a 10-foot-wide strip along each established transect. The species and location of all shrubs and trees within this area will be recorded at the time of the baseline assessment, and will be evaluated during each monitoring event to determine percent survival.

Areas that were cleared or over-cleared and, subsequently, replanted with native trees and shrubs shall be monitored for plant survival for a three-year period. This three-year period will

BA = Baseline Assessment following construction completion.

Obtain final approval from City of Issaguah (presumes performance criteria are met).

guarantee the successful establishment of native vegetation and the prevention of reestablishment of non-native invasive species.

The stream buffers and common edges of forested open space shall be monitored for tree blow-downs after clearing and construction for a period of three years. Areas impacted by tree blow-down shall be replanted with native trees at a ratio consistent with the City of Issaquah's Tree Replacement Code (IMC §18.12.1390).

9.3.2 Photo Documentation

Locations will be established within the mitigation area from which panoramic photographs will be taken throughout the monitoring period. These photographs will document general appearance and relative changes within the plant community. Review of the photos over time will provide a semi-quantitative representation of success of the planting plan. Vegetation sampling transect/plot/quadrat and photo-point locations will be shown on a map and submitted with the baseline assessment report and yearly performance monitoring reports.

9.3.3 Wildlife

Birds, mammals, reptiles, amphibians, and invertebrates observed in the stream buffer areas (either by direct or indirect means) will be identified and recorded during scheduled monitoring events, and at any other times observations are made. Direct observations include actual sightings, while indirect observations include tracks, scat, nests, song, or other indicative signs. The kinds and locations of the habitat with greatest use by each species will be noted, as will any breeding or nesting activities.

9.3.4 Water Quality

Water quality will be assessed qualitatively; unless it is evident there is a serious problem. In such an event, water quality samples will be taken and analyzed in a laboratory for suspected parameters. Qualitative assessments of water quality include:

- oil sheen or other surface films.
- abnormal color or odor of water,
- stressed or dead vegetation or aquatic fauna,
- turbidity, and
- absence of aquatic fauna.

9.3.5 Site Stability

Observations will be made of the general stability of slopes and soils in the mitigation areas during each monitoring event. Any erosion of soils or slumping of slopes will be recorded and corrective measures will be taken.

CHAPTER 10. MAINTENANCE AND CONTINGENCY

Regular maintenance reviews will be performed according to the schedule presented in **Table 5** to address any conditions that could jeopardize the success of the mitigation project. Following maintenance reviews by the biologist or ecologist, required maintenance on the site will be implemented within ten (10) business days of submission of a maintenance memo to the maintenance contractor and permittee.

Established performance standards for the project will be compared to the yearly monitoring results to judge the success of the mitigation. If, during the course of the monitoring period, there appears to be a significant problem with achieving the performance standards, the permittee shall work with the City to develop a Contingency Plan in order to get the project back into compliance with the performance standards. Contingency plans can include, but are not limited to, the following actions: additional plant installation, erosion control, modifications to hydrology, and plant substitutions of type, size, quantity, and/or location. If required, a

Contingency Plan shall be submitted to City by December 31st of any year when deficiencies are discovered.

The following list includes examples of maintenance (M) and contingency (C) actions that may be implemented during the course of the monitoring period. This list is not intended to be exhaustive, and other actions may be implemented as deemed necessary.

- During year one, replace all dead woody plant material (M).
- Water all plantings at a rate of 1" of water every week between June 15 October 15
 during the first two years after installation, and for the first two years after any
 replacement plantings (C & M).
- Replace dead plants with the same species or a substitute species that meets the goals and objectives of the mitigation plan, subject to Talasaea and agency approval (C).
- Re-plant area after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.) (C).
- After consulting with City staff, minor excavations, if deemed to be more beneficial to the
 existing conditions than currently exists, will be made to correct surface drainage
 patterns (C).
- Remove/control weedy or exotic invasive plants (e.g., Scot's broom, reed canarygrass,
 Himalayan blackberry, purple loosestrife, Japanese knotweed, etc.) by manual or
 chemical means approved by permitting agencies. Use of herbicides or pesticides within
 the mitigation area would only be implemented if other measures failed or were
 considered unlikely to be successful, and would require prior agency approval. All nonnative vegetation must be removed and disposed of off-site. (C & M).
- Weed all trees and shrubs to the dripline and provide 3-inch deep mulch rings 24 inches in diameter for shrubs and 36 inches in diameter for trees (M).
- Remove trash and other debris from the mitigation areas twice a year (M).
- Selectively prune woody plants at the direction of Talasaea Consultants to meet the
 mitigation plan's goal and objectives (e.g., thinning and removal of dead or diseased
 portions of trees/shrubs) (M).
- Repair or replace damaged structures including: signs, fences (M).

CHAPTER 11. LONG-TERM MAINTENANCE

Per IMC §18.10.805 all regulated streams located on the property to be developed shall be maintained in perpetuity by the property owner. The overall Long-Term Maintenance Plan goal is to ensure the protection and viability of the critical areas on the Project Site in perpetuity. Long-term management will include maintenance and monitoring tasks that are intended to ensure the viability of the mitigation areas once the performance standards have been achieved at the end of the five-year required monitoring period. Long-Term Management tasks will include, but are not necessarily limited to, the following:

- Conduct periodic walk-through surveys to qualitatively monitor the general condition of the mitigation areas. Establish reference locations for photographs and prepare a site map showing the reference locations. Reference photographs will be taken at the select locations during walk-through surveys to document mitigation site conditions. Document in writing any management or maintenance recommendations or areas of concern during each walk-through survey.
- Monitor and manage non-native invasive species that diminish habitat structure and function within the mitigation site. If necessary, develop and implement specific control actions. These may include, but are not limited to, spot weeding and selective herbicide application.

- Monitor the condition of gates, fencing, and signs around the perimeter of the mitigation areas, and repair and/or replace as necessary to deter human intrusion into the mitigation areas.
- Monitor and maintain vegetative barriers around mitigation areas. Vegetated areas
 along the perimeter of the mitigation areas installed in order to deter human intrusion
 shall be maintained as a dense barrier of continuous woody vegetation so that they
 continue to provide this function. Replace plants as necessary with the same species or
 a suitable substitute native species.
- Clean up trash and debris and repair or rectify damage caused by trespassing or vandalism. Improve management or security measures if necessary to help prevent future instances of vandalism or trespassing.

The property owner (The Wolff Company or its successor) will be responsible for implementing the above tasks in perpetuity in the mitigation areas.

CHAPTER 12. PERFORMANCE BOND

A performance and monitoring bond equal to 150% of the total cost of the mitigation project will be posted with the City if the applicant demonstrates that seasonal requirements or other circumstances prevent completion of the project prior to final approval (IMC §18.10.810). A maintenance/monitoring bond equal to 50% of the estimated maintenance and monitoring costs deemed sufficient to guarantee satisfactory workmanship, materials, and performance of structures and improvements for five years will be posted with the City for this project.

CHAPTER 13. SUMMARY

A critical areas investigation was conducted for the Issaquah Gateway Senior Housing property located in Issaquah, Washington. The Issaquah Gateway Senior Housing property is the location of a proposed 146 unit senior housing development with public open space, trails, and associated parking.

Talasaea Consultants identified one (1) stream on the Issaquah Gateway Senior property, identified as Schneider Creek – Class 2s (Type F).

There will be no direct impacts to Schneider Creek resulting from the proposed site development. However, buffer reduction with enhancement and buffer averaging are being proposed for the Schneider Creek buffer, as well as some minor temporary buffer impacts resulting from utility line construction and grading.

Mitigation for project impacts including buffer reduction with enhancement, buffer averaging, and temporary construction related impacts will include:

- Replacement of 4,630 sf of stream buffer area for the on and off site trails (1:1 replacement ratio).
- Restoration of 1,890 sf of buffer areas temporarily impacted by construction.
- Enhancement of 53,024 sf of the Schneider Creek buffer.

CHAPTER 14. REFERENCES

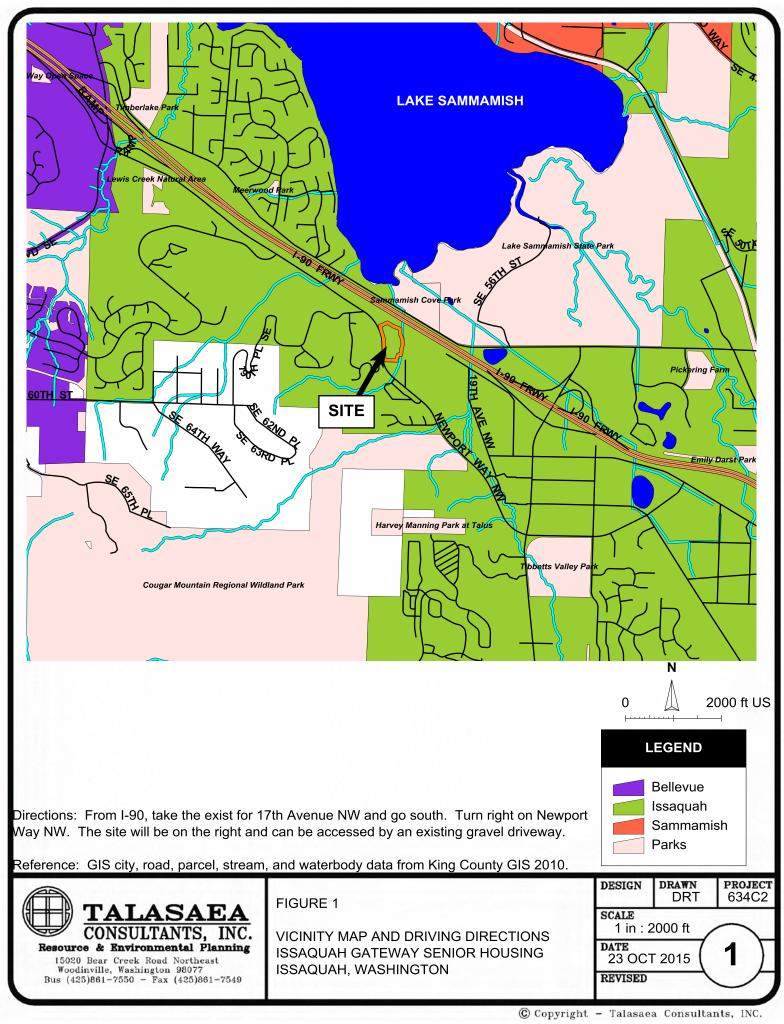
- Cowardin, L., Carter, V., Golet, F., & LaRoe, E. (1979). *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, Department of the Interior.
- Hitchcock, C. A. (1973). Vascular Plants of the Pacific Northwest. Seattle: University of Washinton Press.
- John Comis Associates, Inc. (2007). Stream Study for the "West Village" Property in Issaquah, Washington.
- John Comis Associates, Inc. (2007). Wetland Delineation and Piezometer Monitoring Study for the "West Village" Property in Issaquah, Washington.
- Lake Sammamish Kokanee Work Group. (2014). *Blueprint for the Restoration and Enhancement of Lake Sammamish Kokanee Tributaries.* King County, Washington.
- Lichvar, R. (2012). *National Wetland Plant List.* Hanover, NH: U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory.
- Olson, P. a. (2008). *Determining the Ordinary High Water Mark on Streams in Washington State*. Olympia: Washington State Department of Ecology.
- Parametrix. Stream Inventory and Habitat Evaluation Report including Issaquah Creek, East and North Forks of Issaquah Creek, Tibbett's Creek, and the Shoreline of Lake Sammamish. Prepared for the City of Issaquah, March 2003.
- Reed, P.B. Jr. National List of Plant Species that Occur in Wetlands: Northwest (Region 9). Report 88, USF & WS Biol.Update, 1988.
- Soil Survey Staff, Natural Resources Conservation Service. (2015, October 21). Web Soil Survey. Retrieved October 21, 2015, from NRCS Web Soil Survey: http://websoilsurvey.sc.eqov.usda.qov/App/HomePage.htm
- U.S. Army Corps of Engineers. (2010). Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Fish and Wildlife Service. (2015, October 1). *National Wetlands Inventory*. (W. D. Fish and Wildlife Service, Producer, & U.S. Department of the Interior) Retrieved from National Wetlands Inventory website: http://www.fws.gov/wetlands/
- Washington Department of Fish & Wildlife. (2015, October 1). *Priority Habitat and Species*. Retrieved from WDFW Conservation: http://wdfw.wa.gov/mapping/phs/
- Washington State Department of Ecology. (2012). Stormwater Management Manual for Western Washington.
- Washington State Department of Ecology, US Army Corps of Engineers Seattle District, and US Environmental Protection Agency Region 10. (2006). *Wetland Mitigation in Washington State Part 1: Agency Policies and Guidance (Version 1)*. Olympia, WA: Washington State Department of Ecology.
- Woodruff, K. a. (2005). *Townsend's Big-eared Bat (Corynorhinus townsendii)*. Washington Department of Fish and Wildlife.

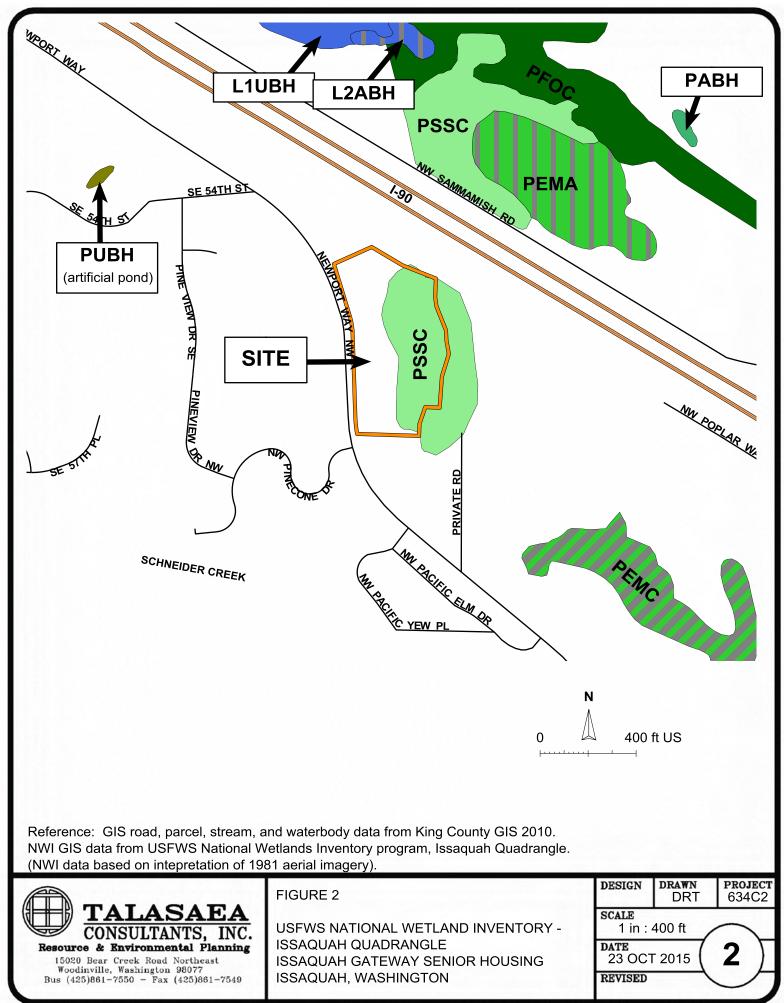
FIGURES

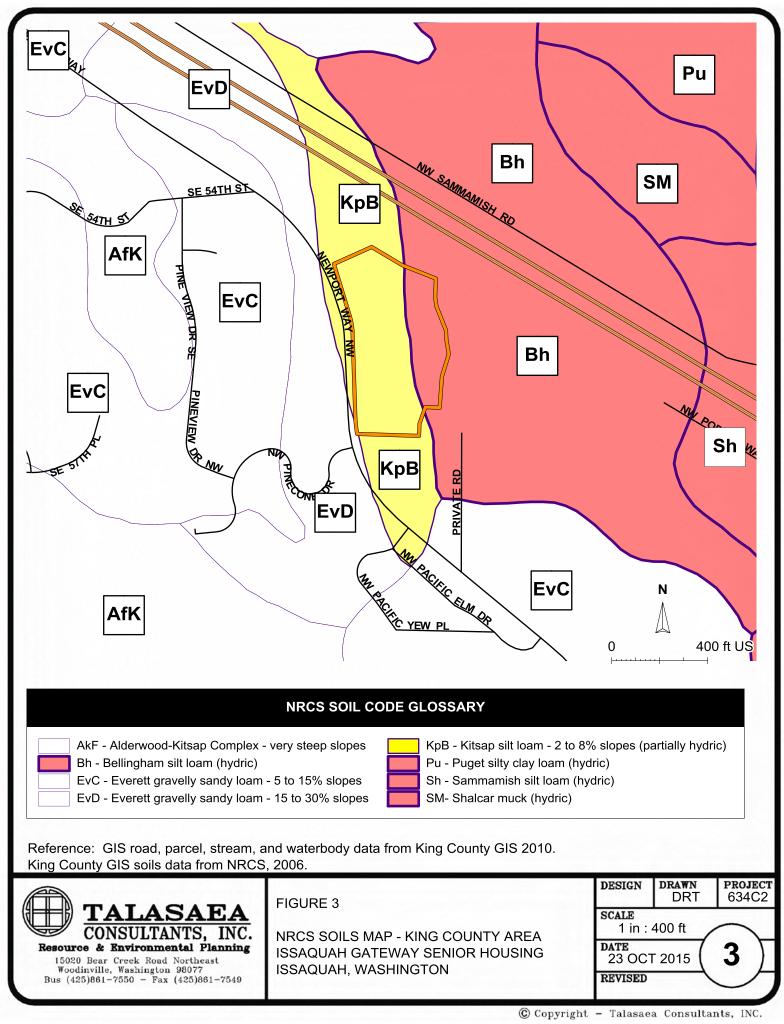
Figure 1: Vicinity Map and Driving Directions
Figure 2: USFWS National Wetland Inventory
Figure 3: NRCS Soils Map – King County Area
Figure 4: FEMA 100-Year Floodplain Map

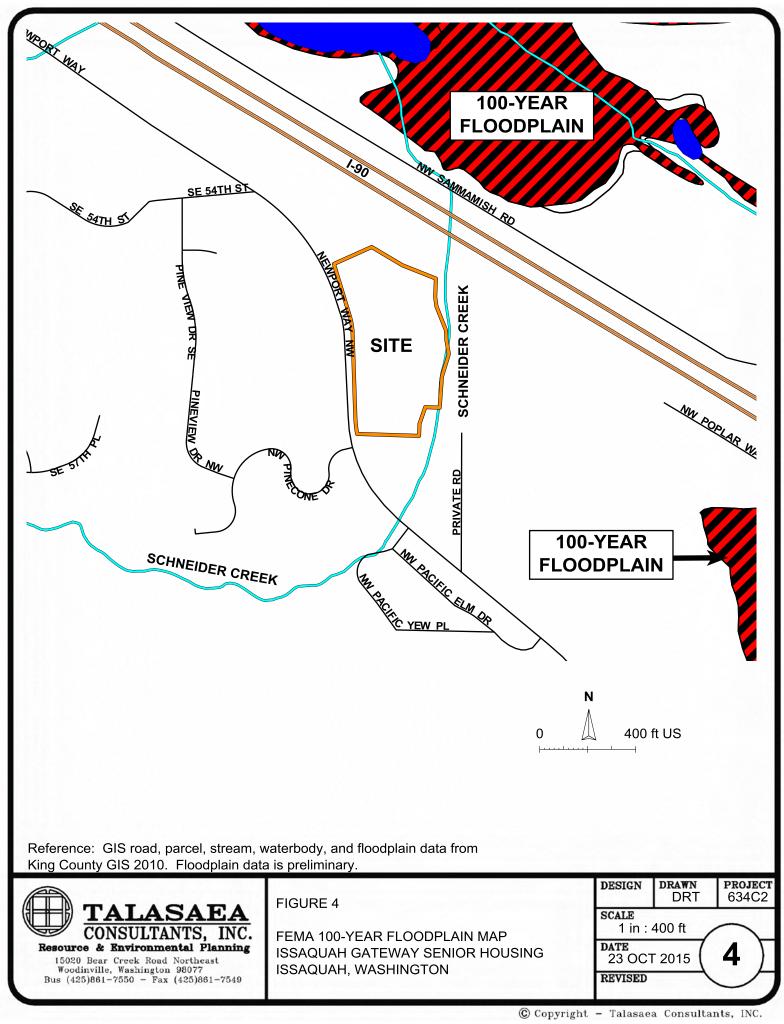
Figure 5: Existing Conditions Plan

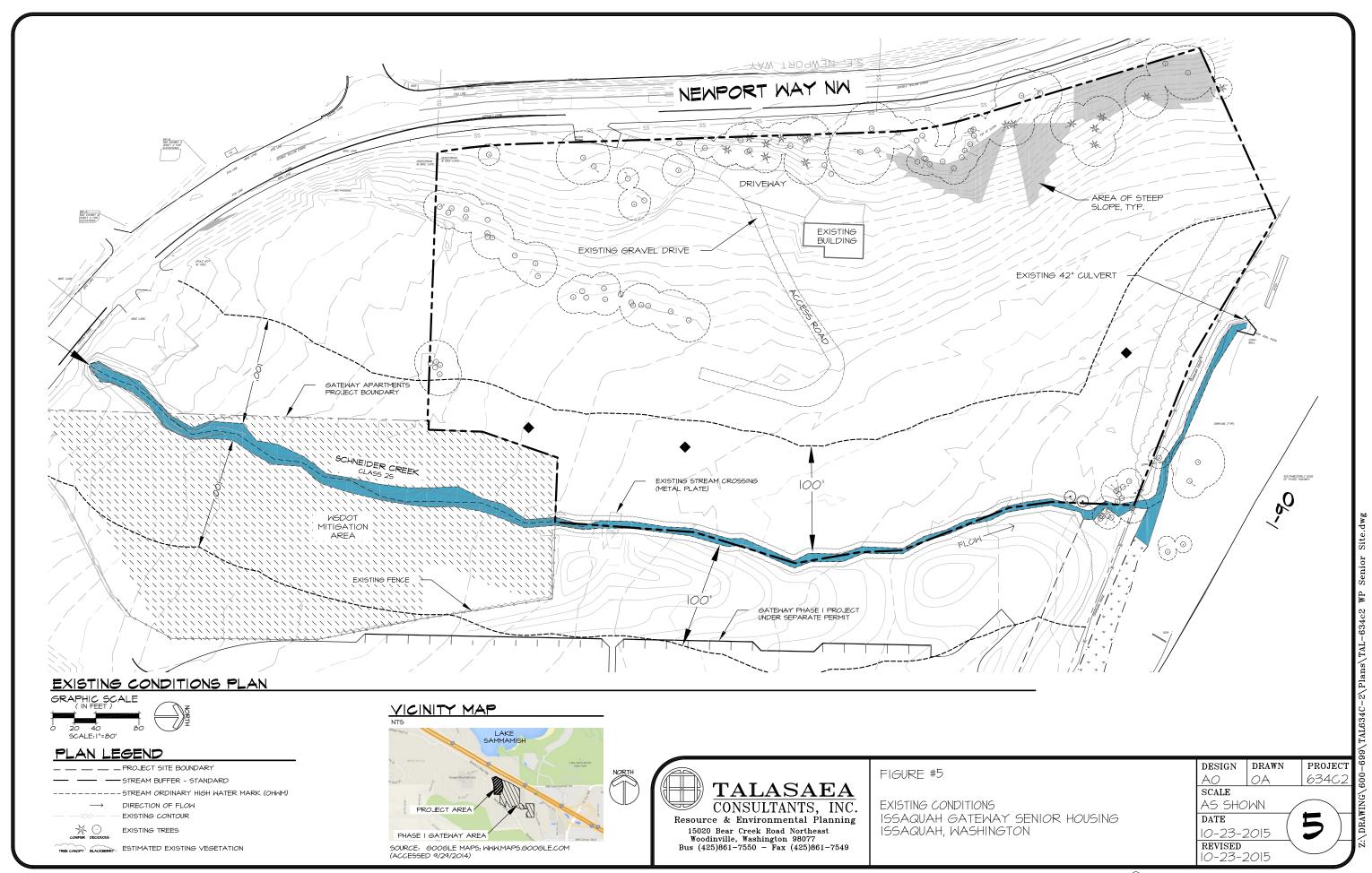
Figure 6: Schneider Creek Potential Fish Habitat Map

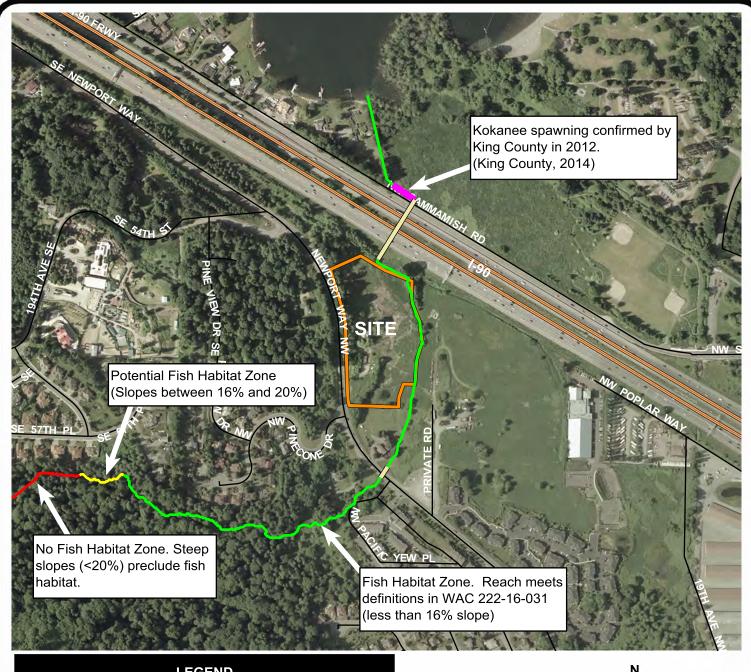












LEGEND



Confirmed Kokanee Spawning (King County, 2014)

Fish Habitat Zone (per WAC 222-16-031)

Potential Fish Habitat Zone (per WAC 222-16-031)

No Fish Habitat Zone (per WAC 222-16-031)

Culvert

NOTE: Fish habitat potential of Schneider Creek upstream of Newport Way NW is based on terrain analysis using LIDAR data from the Puget Sound LIDAR Consortium. LIDAR collection data is 2006. Confirmed kokanee spawning areas approximated based on The Blueprint for the Restoration and Enhancement of Lake Sammamish Kokanee Tributaries,

August 2014 (King County, Page 39).

Reference: GIS road, parcel, stream, and waterbody data from King County GIS 2010. Aerial photograph 2009 from Earth Explorer, downloaded 2013.



15020 Bear Creek Road Northeast Woodinville, Washington 98077 Bus (425)861-7550 - Fax (425)861-7549

FIGURE 6

POTENTIAL FISH HABITAT MAP ISSAQUAH GATEWAY SENIOR HOUSING ISSAQUAH, WASHINGTON

DESIGN	DRAWN DRT	PROJECT 634C2		
SCALE 1 in : 500 ft				
23 OCT 2015 (6)				
REVISED				

500 ft US

APPENDIX A

Conceptual Mitigation Plans (Large Format 22"x34")

(Large Format 22 X34

Sheet W1.0. Existing Conditions Plan **Sheet W1.1.** Proposed Site Plan, Impacts & Mitigation Overview Plan

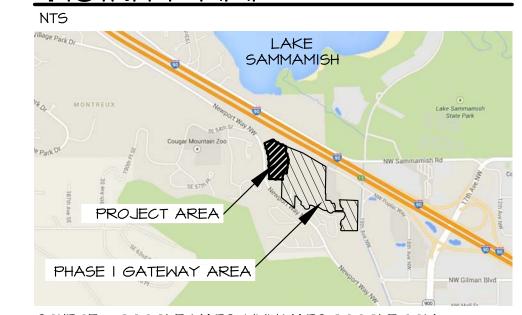
Sheet W2.0. Preliminary Grading Plan & Section

Sheet W2.1. Grading Details

Sheet W2.2. Preliminary Grading Specifications

Sheet W3.0. Candidate Plant List, Planting Typicals, Notes & Details

VICINITY MAP



SOURCE: GOOGLE MAPS; WWW.MAPS.GOOGLE.COM (ACCESSED 9/29/2014)

CONTACTS

APPLICANT/OWNER THE WOLFF COMPANY NAME:

ADDRESS: 6710 EAST CAMELBACK RD, STE 100 SCOTTSDALE, AZ 85251

(480) 315-9595 PHONE: CONTACT: GREG VAN PATTEN

ARCHITECT

NAME:

VIA ARCHITECTURE 1809 7TH AVENUE, STE. 800 ADDRESS: SEATTLE, WA 98101

(800) 328-0556 PHONE: CONTACT: DERRICK OVERBAY

SURVEYOR/ENGINEER

TRIAD ASSOCIATES NAME:

20300 WOODINVILLE-SNOHOMISH ADDRESS:

ROAD NE, STE. A WOODINVILLE, WA 98072

(425) 821-8448 PHONE: ROY LEWIS, JR., P.E., LEED AP CONTACT:

ENVIRONMENTAL CONSULTANT

TALASAEA CONSULTANTS, INC. NAME: 15020 BEAR CREEK RD. NE ADDRESS: WOODINVILLE, WA 98077

(425) 861-7550 PHONE:

ANN OLSEN, RLA, CONTACT: SENIOR PROJECT MANAGER

JENNIFER MARRIOTT, SENIOR WETLAND ECOLOGIST

SHEET INDEX

NUMBER SHEET TITLE EXISTING CONDITIONS PLAN PROPOSED SITE PLAN, IMPACTS & MITIGATION OVERVIEW PLAN PRELIMINARY GRADING PLAN & SECTION W2.1

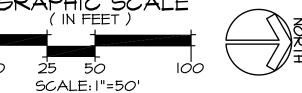
GRADING DETAILS

W3.0

W2.2 PRELIMINARY GRADING SPECIFICATIONS

> CANDIDATE PLANT LIST, PLANTING TYPICALS, NOTES & DETAILS

GRAPHIC SCALE



PLAN LEGEND

- PROJECT SITE BOUNDARY - STREAM BUFFER - STANDARD ---- STREAM ORDINARY HIGH WATER MARK (OHWM)

EXISTING CONTOUR

EXISTING TREES

DIRECTION OF FLOW

TREE CANOPY BLACKBERRY ESTIMATED EXISTING VEGETATION

NOT FOR CONSTRUCTION THESE PLANS HAVE BEEN

SUBMITTED TO THE APPROPRIATE AGENCIES FOR REVIEW AND APPROVAL. UNTIL APPROVED, THESE PLANS ARE: SUBJECT TO REVISION



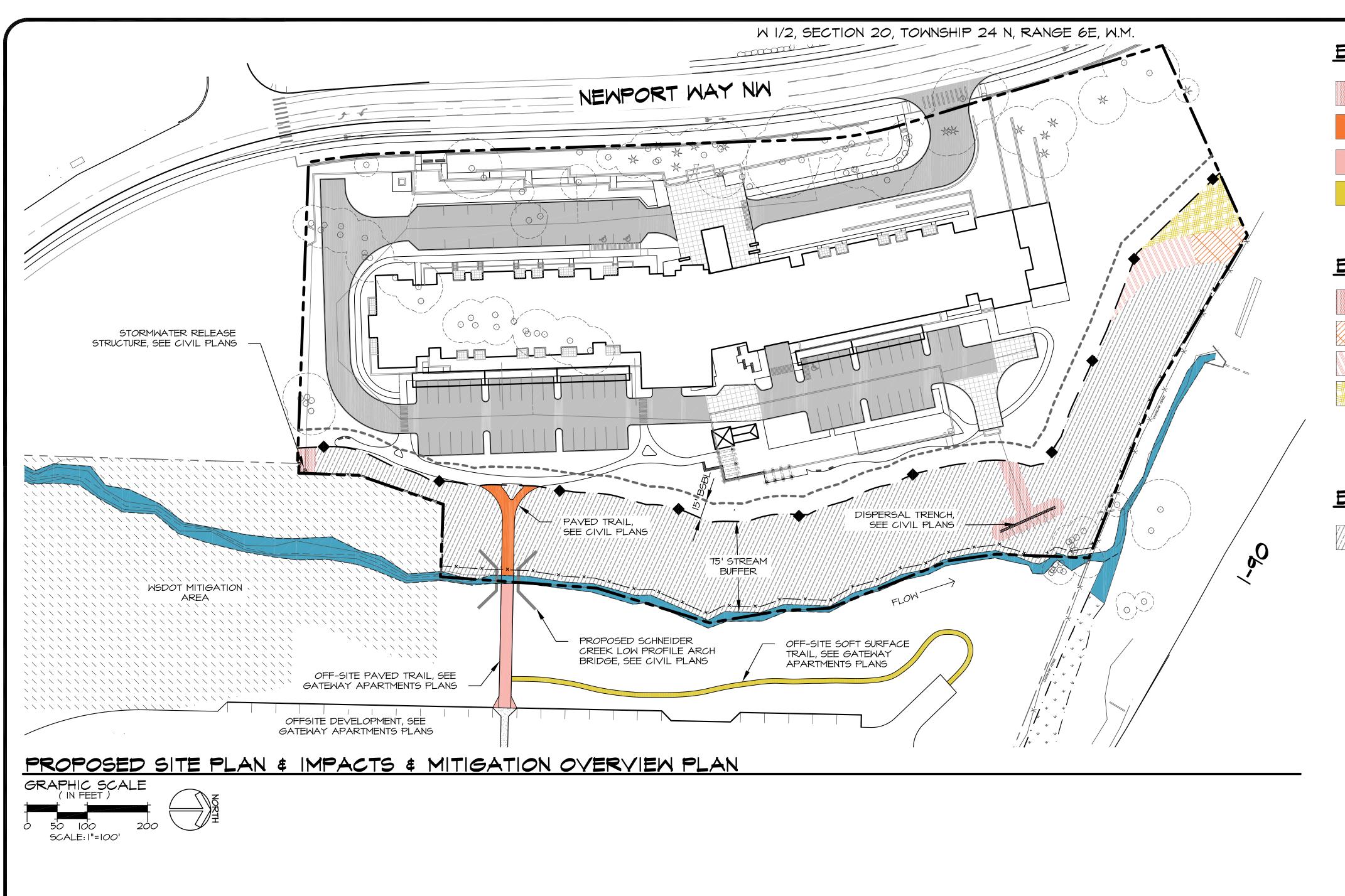
Call before you dig.

- SURVEY PROVIDED BY TRIAD ASSOCIATES, 20300 WOODINVILLE SNOHOMISH ROAD NE, STE. A WOODINVILLE, WA 98072, (425) 821-8448.
- 2. SITE PLAN PROVIDED BY VIA ARCHITECTURE, 1809 7TH AVENUE STE. 800, SEATTLE, WA 98101 (800) 328-0556.
- SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL
- ENHANCEMENT. 4. THESE PLANS ARE A SUPPLEMENTAL ATTACHMENT TO THE CRITICAL AREAS STUDY & MITIGATION PLAN, DATED OCTOBER 2015

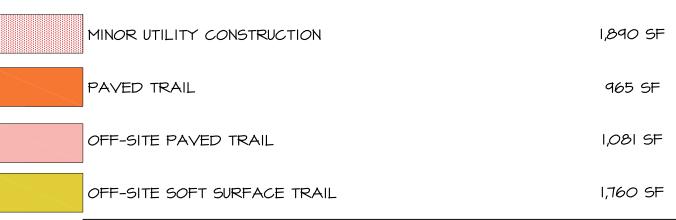
10-23-201 Date AS SHOWN Scale Designed AO Drawn <u>ABS/OA</u> Checked AO Approved <u>BS</u>

Project # 634C2

Sheet # M.O



BUFFER IMPACTS LEGEND



TOTAL IMPACTS 5,696 SF

BUFFER MITIGATION LEGEND

MINOR UTILITY CONSTRUCTION BUFFER RESTORATION	1,890 SF
PAVED TRAIL MITIGATION	1,092 SF
OFF-SITE PAVED TRAIL MITIGATION	1,624 SF
OFF-SITE SOFT SURFACE TRAIL MITIGATION	1,914 SF

TOTAL BUFFER MITIGATION 6,520 SF

BUFFER ENHANCEMENT LEGEND

53,024 SF BUFFER ENHANCEMENT

PLAN LEGEND

-----15' BSBL -----STREAM ORDINARY HIGH WATER MARK (OHWM) FLOW --> DIRECTION OF FLOW POST CONSTRUCTION STREAM BUFFER BOUNDARY NGPE SIGN - SEE DETAIL

NOTES

NOT FOR CONSTRUCTION THESE PLANS HAVE BEEN SUBMITTED TO THE APPROPRIATE AGENCIES FOR REVIEW AND APPROVAL. UNTIL APPROVED, THESE PLANS ARE: SUBJECT TO REVISION

Know what's **below.**

Call before you dig

- SURVEY PROVIDED BY TRIAD ASSOCIATES, 20300 WOODINVILLE SNOHOMISH ROAD NE, STE. A WOODINVILLE, WA 98072,
- (425) 821-8448. SITE PLAN PROVIDED BY VIA ARCHITECTURE, 1809 7TH AVENUE STE. 800, SEATTLE, WA 98101
- (800) 328-0556. SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL
- ENHANCEMENT. 4. THESE PLANS ARE A SUPPLEMENTAL ATTACHMENT TO THE CRITICAL AREAS STUDY &

MITIGATION PLAN, DATED OCTOBER 2015

10-23-201 AS SHOWN Designed <u>AO</u>
Drawn <u>ABS/OA</u>

Checked AO

Sheet #

Scale

Approved <u>BS</u>

EXISTING TREES

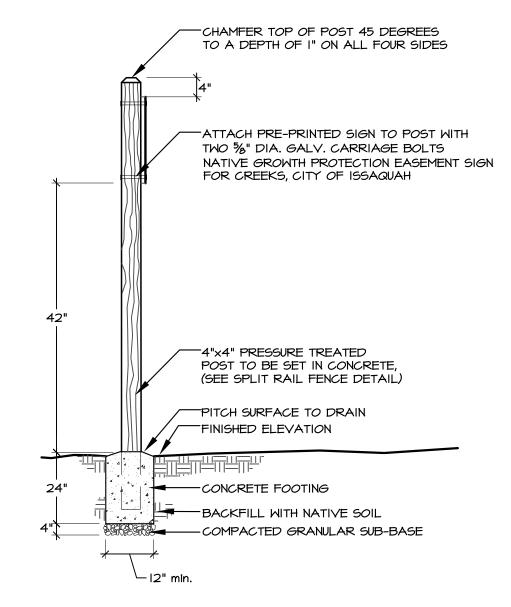
10-23-201 AS SHOWN

Scale Designed AO
Drawn ABS/OA Checked <u>AO</u> Approved <u>BS</u>

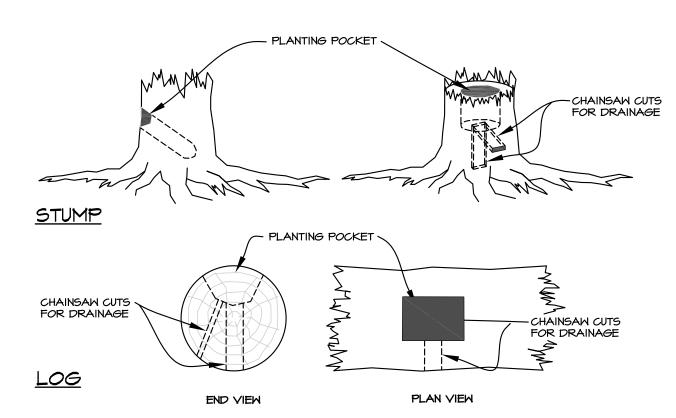
Project #<u>634C2</u>

Sheet # **M2.0**

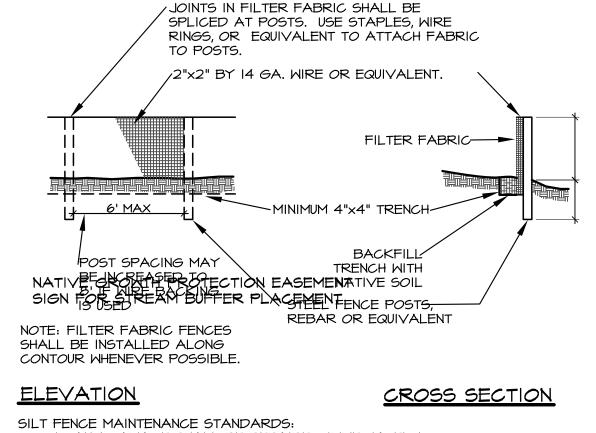
SNAG WITH NEST BOX DETAIL



4) NGPA SIGN DETAIL TYP.



2) STUMP WITH PLANTING POCKETS DETAIL



I. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.

2. IF CONCENTRATED FLOWS ARE EVIDENT UPSLOPE OF THE FENCE, THEY MUST BE INTERCEPTED AND CONVEYED TO A SEDIMENT POND.

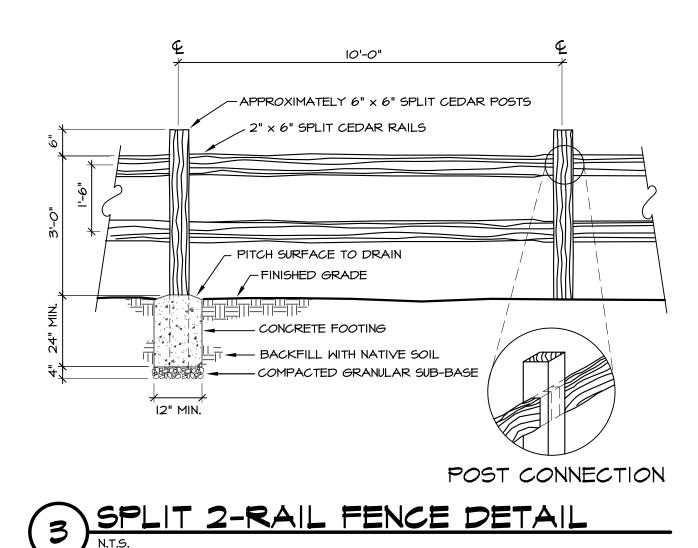
3. CONTRACTOR SHALL CHECK THE UPSLOPE SIDE OF THE FENCE FOR SIGNS OF

CLOGGING AND SUBSEQUENT CHANNELIZATION OF FLOWS PARALLEL TO THE FENCE. IF THIS OCCURS, REPLACE THE FENCE AND/OR REMOVE THE TRAPPED SEDIMENT.

4. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION EXCEEDS 6" IN DEPTH.

5 SILT FENCE DETAIL TYP.

SCALE: NTS



MITIGATION CONSTRUCTION SEQUENCE

THE FOLLOWING PROVIDES THE GENERAL SEQUENCE OF ACTIVITIES ANTICIPATED TO BE NECESSARY TO COMPLETE THIS MITIGATION PROJECT. SOME OF THESE

- ACTIVITIES MAY BE CONDUCTED CONCURRENTLY AS THE PROJECT PROGRESSES. CONDUCT A SITE MEETING BETWEEN THE CONTRACTOR, TALASAEA CONSULTANTS, AND THE OWNER'S REPRESENTATIVE TO REVIEW THE PROJECT PLANS, STAGING/STOCKPILE AREAS, AND MATERIAL DISPOSAL AREAS.
- SURVEY CLEARING LIMITS.
- INSTALL SILT FENCE AND ANY OTHER EROSION AND SEDIMENTATION CONTROL
- BMPS NECESSARY FOR WORK IN THE PROJECT AREAS. 4. CLEAR AND GRUB EARTHWORK AREAS.
- SURVEY EARTHWORK AREAS AND SET GRADE STAKES AS REQUIRED.
- STRIP AND STOCKPILE ACCEPTABLE TOPSOIL FROM EXCAVATION AND FILL
- COMPLETE THE MITIGATION AREAS TO ROUGH GRADE, USING ACCEPTABLE CLEAN FILL MATERIALS FROM THESE EXCAVATIONS TO CONCURRENTLY CONSTRUCT ANY EARTHEN BERMS SHOWN ON THE PLANS.
- GRUB INVASIVE SPECIES BY HAND FROM ENHANCED EXISTING VEGETATED BUFFER AREAS.
- 9. INSTALL SNAGS & BURIED ROOTWADS
- IO. PLACE TOPSOIL.
- PLACE HABITAT FEATURES, INCLUDING DOWN LOGS AND ROOTWADS.
- 12. MULCH ALL GRADED BUFFER AREAS.
- COMPLETE SITE CLEANUP AND INSTALL PLANT MATERIAL AS INDICATED ON THE MITIGATION PLANS (SEE PLANTING SPECIFICATIONS).
- 14. INSTALL TEMPORARY IRRIGATION 15. INSTALL FENCING AND CRITICAL AREA PROTECTION SIGNS.

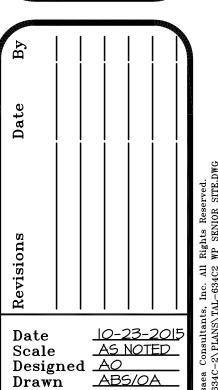
NOT FOR CONSTRUCTION THESE PLANS HAVE BEEN SUBMITTED TO THE APPROPRIATE AGENCIES FOR REVIEW AND APPROVAL. UNTIL APPROVED, THESE PLANS ARE:

SUBJECT TO REVISION



Know what's **below.** Call before you dig.

- SURVEY PROVIDED BY TRIAD ASSOCIATES, 20300 WOODINVILLE SNOHOMISH ROAD NE, STE. A WOODINVILLE, WA 98072, (425) 821-8448.
- SITE PLAN PROVIDED BY VIA ARCHITECTURE, 1809 7TH AVENUE STE. 800, SEATTLE, WA 98101
- (800) 328-0556. SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL
- ENHANCEMENT. 4. THESE PLANS ARE A SUPPLEMENTAL ATTACHMENT TO THE CRITICAL AREAS STUDY & MITIGATION PLAN, DATED OCTOBER 2015



Approved <u>BS</u>

Checked <u>AO</u>

Sheet # M2.

PART I: GENERAL

- I.I SEQUENCING
- A. <u>GENERAL CONSTRUCTION:</u>
- I. CONTRACTOR SHALL GIVE TALASAEA CONSULTANTS A MINIMUM OF TEN (IO) DAYS NOTICE PRIOR TO BEGINNING CONSTRUCTION.
- 2. NO CONSTRUCTION WORK SHALL COMMENCE UNTIL THERE IS A MEETING BETWEEN THE CLIENT, TALASAEA CONSULTANTS, GENERAL, CLEARING, AND/OR EARTHWORK CONTRACTORS, AND THE LANDSCAPE CONTRACTOR. THE APPROVED PLANS AND SPECIFICATIONS SHALL BE REVIEWED TO ENSURE THAT ALL PARTIES INVOLVED UNDERSTAND THE INTENT AND THE SPECIFIC DETAILS RELATED TO THE CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONSTRAINTS.
- 3. LOCATIONS OF EXISTING UTILITIES HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO: (1) INDEPENDENTLY VERIFY THE ACCURACY OF UTILITY LOCATIONS AND (2) DISCOVER AND AVOID ANY UTILITIES WITHIN THE MITIGATION PLAN AREA(S) THAT ARE NOT SHOWN, BUT WHICH MAY BE AFFECTED BY IMPLEMENTATION OF THE PLAN. SUCH AREA(S) ARE TO BE CLEARLY MARKED IN THE FIELD. TALASAEA CONSULTANTS SHALL REVIEW ANY CONFLICTS WITH THE APPROVED GRADING PLAN PRIOR TO START OF CONSTRUCTION.
- 4. A COPY OF THE APPROVED PLANS MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS, AND SHALL REMAIN ON SITE UNTIL PROJECT
- 5. CONSTRUCTION MUST BE PERFORMED IN ACCORDANCE WITH ALL AGENCY STANDARDS, RULES, CODES, PERMIT CONDITIONS, AND/OR OTHER APPLICABLE ORDINANCES AND POLICIES.
- 6. THE PROJECT OWNER/APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER RELATED OR REQUIRED PERMITS PRIOR TO THE START OF CONSTRUCTION.
- 7. A QUALIFIED WETLAND CONSULTANT SHALL BE ON SITE, AS NECESSARY, TO MONITOR CONSTRUCTION AND APPROVE MINOR REVISIONS TO THE PLAN.
- 8. TOPOGRAPHIC ELEVATIONS REPRESENTED ON MITIGATION PLANS ARE BASED UPON TOPOGRAPHIC MAPS SUPPLIED BY THE SURVEYOR. FINAL ELEVATIONS MAY VARY DEPENDING ON SITE-SPECIFIC CONDITIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY PRE-CONSTRUCTION TOPOGRAPHIC ELEVATIONS FOR ACCURACY PRIOR TO GRADING. CONTRACTOR SHALL NOTIFY TALASAEA CONSULTANTS IMMEDIATELY IF ANY MODIFICATIONS TO THE PLANS MAY BE NECESSARY DUE TO INACCURACIES OF THE ORIGINAL SURVEY.
- 9. DURING CONSTRUCTION, THE CONTRACTOR MUST USE MATERIALS AND CONSTRUCTION METHODS THAT PREVENT TOXIC SUBSTANCES AND OTHER POLLUTANTS FROM ENTERING MITIGATION AREAS OR OTHER NATURAL WATERS OF THE STATE.
- IO.PREVENTATIVE MEASURES SHALL BE USED TO PROTECT EXISTING STORM DRAINAGE SYSTEMS, EXISTING UTILITIES, AND ROADS
- II. THE CONTRACTOR SHALL PROVIDE SEDIMENT AND EROSION CONTROLS AROUND THE PROJECT AREA PRIOR TO SOIL DISTURBANCE FROM CONSTRUCTION ACTIVITY.
- B. MITIGATION CONSTRUCTION: THE FOLLOWING PROVIDES THE GENERAL SEQUENCE OF ACTIVITIES ANTICIPATED TO BE NECESSARY TO COMPLETE THIS MITIGATION PROJECT. SOME OF THESE ACTIVITIES MAY BE CONDUCTED CONCURRENTLY AS THE PROJECT PROGRESSES.
- I. CONDUCT A SITE MEETING BETWEEN THE CONTRACTOR, TALASAEA CONSULTANTS, AND THE OWNER'S REPRESENTATIVE TO REVIEW THE PROJECT PLANS, STAGING/STOCKPILE AREAS, AND MATERIAL DISPOSAL AREAS.
- 2. SURVEY CLEARING LIMITS. 3. INSTALL SILT FENCE AND ANY OTHER EROSION AND SEDIMENTATION
- CONTROL BMPS NECESSARY FOR WORK IN THE PROJECT AREAS. 4. CLEAR AND GRUB EARTHWORK AREAS.
- 5. SURVEY EARTHWORK AREAS AND SET GRADE STAKES AS REQUIRED. 6. STRIP AND STOCKPILE ACCEPTABLE TOPSOIL FROM EXCAVATION AND FILL AREAS.
- 7. COMPLETE THE MITIGATION AREAS TO ROUGH GRADE, USING ACCEPTABLE CLEAN FILL MATERIALS FROM THESE EXCAVATIONS TO CONCURRENTLY CONSTRUCT ANY EARTHEN BERMS SHOWN ON THE PLANS.
- 8. GRUB INVASIVE SPECIES BY HAND FROM ENHANCED EXISTING VEGETATED BUFFER AREAS.
- 9. INSTALL SNAGS & BURIED ROOTWADS
- IO.PLACE TOPSOIL
- II. PLACE HABITAT FEATURES, INCLUDING DOWN LOGS AND ROOTWADS.
- 12.MULCH ALL GRADED BUFFER AREAS.
- 13.COMPLETE SITE CLEANUP AND INSTALL PLANT MATERIAL AS INDICATED ON THE MITIGATION PLANS (SEE PLANTING SPECIFICATIONS).
- 14.INSTALL TEMPORARY IRRIGATION 15.INSTALL FENCING AND CRITICAL AREA PROTECTION SIGNS.
- I.2 PROJECT CONDITIONS
- A. PROTECTION AND MAINTENANCE OF OFF-SITE AREAS: CONTRACTOR SHALL ENSURE THAT CONSTRUCTION RELATED ACTIVITIES DO NOT DAMAGE OFF-SITE FEATURES OR ADJACENT VEGETATION. TALASAEA CONSULTANTS SHALL BE NOTIFIED IMMEDIATELY IF ACCIDENTAL DAMAGE OCCURS. CONTRACTOR SHALL ENSURE THAT ADJACENT ROADS ARE MAINTAINED AND KEPT CLEAR OF SOIL AND/OR OTHER DEBRIS AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL COMPLY WITH THE GOVERNING JURISDICTION'S CODES REGARDING STREET MAINTENANCE/CLEANING DURING CONSTRUCTION.
- B. PLAN CHANGES AND MODIFICATIONS: ANY CHANGES OR MODIFICATIONS TO THE MITIGATION PLANS OR SPECIFICATIONS MUST RECEIVE PRIOR APPROVAL FROM THE OWNER'S REPRESENTATIVE, TALASAEA CONSULTANTS, AND APPLICABLE AGENCIES.

I.3 WARRANTY

A. WARRANTY TERMS AND CONDITIONS: A CONTRACTOR-PROVIDED WARRANTY SHALL EXTEND FOR A PERIOD OF ONE YEAR FROM THE DATE OF PHYSICAL COMPLETION. PHYSICAL COMPLETION FOR THE WORK OF THIS SECTION IS THE DATE WHEN ALL GRADING, PLANTING, IRRIGATION, AND RELATED PHASES OF SUCH WORK HAVE BEEN COMPLETED AND ARE ACCEPTED BY THE OWNER'S REPRESENTATIVE, TALASAEA CONSULTANTS, AND APPLICABLE AGENCIES. CONTRACTOR'S WARRANTY SHALL INCLUDE GRADING CORRECTIONS.

PART 2: PRODUCTS AND MATERIALS

- 2.IHABITAT FEATURES
- A. SWALLOW NESTING BOXES
- I. SWALLOW NESTING BOXES AND BOXES SHALL BE CONSTRUCTED OF CEDAR OR CYPRESS.

- 2. CONTRACTOR MAY PURCHASE SWALLOW NESTING BOXES AT:
- a.TALASAEA CONSULTANTS, (425) 861-7550 OR,
- b.SEATTLE AUDUBON SOCIETY, (206) 523-4483 OR,

c.WILD BIRDS UNLIMITED, (206) 575-4001

- B. <u>SNAGS:</u> SNAGS SHALL BE CEDAR OR FIR SPECIES, 24-53 FEET LONG, WITH A MINIMUM OF EIGHT MAIN BRANCHES, AND A MINIMUM DIAMETER OF 20 INCHES AT GROUND LEVEL AFTER INSTALLATION.
- C. <u>DOWN LOGS:</u> DOWN LOGS SHALL BE CEDAR OR FIR SPECIES, HAVE A 20 FOOT MINIMUM LENGTH, WITH OR WITHOUT ROOTS, AND A MINIMUM DIAMETER OF 18 INCHES, BARK SHALL BE KEPT INTACT. ENDS THAT HAVE BEEN CUT SHALL BE DISTRESSED AND NOT BLUNT.
- D. ROOTWADS: ROOTWADS SHALL HAVE TEN FEET OF TRUNK WITH ROOTS.
- E. <u>STUMPS</u>: STUMPS SHALL BE EITHER PART-DECAYED, RELOCATED STUMPS, OR CUT LIVE ROOTWADS WITH A MINIMUM OF THREE FEET OF TRUNK 20 INCHES IN DIAMETER MINIMUM. ENDS THAT HAVE BEEN CUT SHALL BE DISTRESSED AND NOT BLUNT.
- F. BOULDERS:
- I. USE BOULDERS UNCOVERED FROM ON-SITE GRADING OPERATIONS, IF AVAILABLE.
- 2. ONE OR TWO-PERSON MINIMUM SIZE WITH TWELVE INCHES MINIMUM DIAMETER.
- 2.2 SOFT-SURFACE PATH
- A. TRAIL SURFACING SHALL BE CLEAN WOOD CHIPS PRODUCED FROM CONIFEROUS TREE SPECIES. WOOD CHIPS SHALL NOT EXCEED A MAX. SIZE OF 1.5 INCHES IN ANY DIMENSION. WOOD CHIPS SHALL NOT CONTAIN AN EXCESS OF SMALL TWIG AND BRANCH MATERIAL OR GREEN MATERIAL SUCH AS NEEDLES OR LEAVES, AND SHALL BE COMPLETELY FREE OF DIRT, TRASH, ROCKS, OR OTHER NON-WOODY DEBRIS.

2.3 TOPSOIL

- A. <u>TOPSOIL:</u> TOPSOIL THAT HAS BEEN STOCKPILED ON-SITE FOR REUSE IN PROJECT AREA(S) OR IMPORTED FROM OFF-SITE SOURCES SHALL BE FERTILE, FRIABLE, SANDY LOAM SURFACE SOIL, FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, ROOTS, STUMPS, STONES LARGER THAN I INCH IN ANY DIMENSION, LITTER, OR ANY OTHER EXTRANEOUS OR TOXIC MATTER HARMFUL TO PLANT GROWTH.
- B. <u>ORGANIC CONTENT:</u> IMPORTED TOPSOIL SHALL CONSIST OF ORGANIC MATERIALS AMENDED AS NECESSARY TO PRODUCE A BULK ORGANIC CONTENT OF AT LEAST 10 PERCENT AND NOT GREATER THAN 20 PERCENT, AS DETERMINED BY AASHTO-T-194.
- 2.4 MULCH
- A. BARK OR WOODCHIP MULCH SHALL BE DERIVED FROM DOUGLAS FIR, PINE, OR HEMLOCK SPECIES. THE MULCH SHALL NOT CONTAIN RESIN, TANNIN, OR OTHER COMPOUNDS IN QUANTITIES THAT WOULD BE DETRIMENTAL TO ANIMAL, PLANT LIFE, OR WATER QUALITY. SAWDUST SHALL NOT BE USED AS MULCH.
- B. MULCH SHALL BE MEDIUM-COARSE GROUND WITH AN APPROXIMATELY 3-INCH MINUS PARTICLE SIZE. FINE PARTICLES SHALL BE MINIMIZED SO THAT NOT MORE THAN 30%, BY LOOSE VOLUME, WILL PASS THROUGH A US NO. 4 SIEVE.
- 2.5 SEED MIX FOR WETLANDS
- A. SEEDS FOR WETLAND MIX SHALL HAVE BEEN HARVESTED A MAXIMUM OF ONE YEAR PRIOR TO DATE OF SEED APPLICATION, AND STRATIFIED OR OTHERWISE PROCESSED TO ENSURE OPTIMAL GERMINATION RATE. INITIAL SEEDING MUST OCCUR BY SEPTEMBER IST.

PART 3: EXECUTION

- A. SURVEY/STAKE/FLAG LIMITS OF CLEARING:
- I. PRIOR TO ANY CONSTRUCTION, A LICENSED SURVEYOR SHALL SURVEY, STAKE, AND FLAG CLEARING LIMITS. CLEARING LIMITS ARE DEPICTED ON THE MITIGATION PLANS. TALASAEA CONSULTANTS SHALL REVIEW AND APPROVE FLAGGING OF CLEARING LIMITS PRIOR TO ANY VEGETATION REMOVAL. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ACTUAL LOCATIONS OF VEGETATION TO BE SAVED AND REQUEST THAT TALASAEA CONSULTANTS MODIFY THE GRADING PLAN AS NECESSARY TO AVOID ALL SIGNIFICANT NATIVE VEGETATION.
- B. FLAG AND PROTECT EXISTING VEGETATION TO REMAIN:
- I. CONTRACTOR SHALL BE RESPONSIBLE FOR AVOIDING DISTURBANCE TO EXISTING VEGETATION LOCATED OUTSIDE THE CLEARING LIMITS. NO REMOVAL OF ANY VEGETATION SHALL OCCUR WITHOUT PRIOR APPROVAL BY TALASAEA CONSULTANTS.
- 2. TALASAEA CONSULTANTS SHALL FLAG EXISTING VEGETATION TO REMAIN LOCATED WITHIN THE PROJECT AREA(S). PRIOR TO GRADING, CONTRACTOR SHALL INSTALL ORANGE BARRIER FENCING 2 FEET BEYOND THE DRIPLINE OF FLAGGED EXISTING VEGETATION. FLAGGED VEGETATION SHALL NOT BE DISTURBED, UNLESS APPROVED IN WRITING BY TALASAEA CONSULTANTS. FENCING SHALL REMAIN IN PLACE UNTIL THE COMPLETION OF EARTHWORK.
- 3. CONTRACTOR SHALL EXERCISE CARE TO PREVENT INJURY TO THE TRUNK, ROOTS, AND BRANCHES OF TREES AND SHRUBS TO REMAIN. ANY WOODY PLANT TO REMAIN THAT IS DAMAGED DURING CONSTRUCTION SHALL BE TREATED IMMEDIATELY AFTER DAMAGE OCCURS, AND TALASAEA CONSULTANTS SHALL BE NOTIFIED OF INCIDENT. DAMAGE TREATMENT SHALL INCLUDE EVENLY CUTTING BROKEN BRANCHES, BROKEN ROOTS, AND DAMAGED TREE BARK. INJURED PLANTS SHALL BE THOROUGHLY WATERED AND ADDITIONAL MEASURES SHALL BE TAKEN, AS APPROPRIATE, TO AID IN PLANT SURVIVAL.
- C. FLAG VEGETATION & WOODY MATERIAL FOR FUTURE USE AS HABITAT FEATURES:
- I. TALASAEA CONSULTANTS SHALL FLAG EXISTING VEGETATION AND WOODY MATERIAL (SNAGS, STUMPS, DOWN LOGS, AND BOULDERS), IF AVAILABLE, TO BE RELOCATED BY THE CONTRACTOR FROM WITHIN THE DEVELOPMENT FOOTPRINT FOR USE AS HABITAT FEATURES IN THE MITIGATION AREA(S). WHENEVER POSSIBLE, HABITAT FEATURES SHALL BE MOVED DIRECTLY TO PERMANENT LOCATIONS. IF NECESSARY, HABITAT FEATURES SHALL BE PLACED IN STOCKPILE AREAS AS NEAR TO PERMANENT LOCATIONS AS POSSIBLE. TALASAEA CONSULTANTS SHALL DESIGNATE STOCKPILE AREAS.
- 2. CONTRACTOR SHALL EXERCISE CARE WHEN MOVING HABITAT FEATURES TO AVOID BREAKING BRANCHES, SCUFFING BARK, OR BREAKING ROOTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BREAK PIECES INTO USABLE
- 3. IF HABITAT FEATURES ARE NOT AVAILABLE FROM ANY PORTION OF THE DEVELOPMENT FOOTPRINT, THEN FEATURES SHALL BE PROVIDED BY THE CONTRACTOR.
- D. PLACE EROSION CONTROL MEASURES:
- I. CONTRACTOR SHALL INSTALL SILT FENCING DOWNSLOPE OF THE CLEARING LIMITS DEPICTED ON THE MITIGATION GRADING PLANS PRIOR TO ANY CONSTRUCTION ACTIVITY. CONTRACTOR SHALL MAINTAIN EROSION CONTROL FACILITIES UNTIL COMPLETION OF CONSTRUCTION. TALASAEA CONSULTANTS SHALL VERIFY AND APPROVE LOCATIONS OF EROSION CONTROL MEASURES PRIOR TO SITE GRADING.

- 2. SITE AREAS EXPOSED DURING GRADING AND CONSTRUCTION MUST BE COVERED WITH STRAW (MAXIMUM DEPTH 3 INCHES), EROSION CONTROL NETTING, PLASTIC SHEETING, OR PERMANENT EROSION CONTROL WITHIN 48 HOURS OF DISTURBANCE, OR AS REQUIRED FOR NPDES OR LOCAL JURISDICTION COMPLIANCE.
- 3. CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES FOR THE DURATION OF THE PROJECT. THESE MEASURES SHALL REMAIN IN PLACE UNTIL AUTHORIZATION IS GIVEN BY TALASAEA CONSULTANTS FOR REMOVAL OR LOCATION ADJUSTMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ALL EROSION CONTROL MEASURES ADJACENT TO SENSITIVE AREAS WHEN AUTHORIZED BY TALASAEA CONSULTANTS.
- 4. AS CONSTRUCTION PROGRESSES AND SEASONAL CONDITIONS DICTATE EROSION CONTROL FACILITIES SHALL BE MAINTAINED AND/OR ALTERED AS REQUIRED BY TALASAEA CONSULTANTS TO ENSURE CONTINUED EROSION/SEDIMENTATION CONTROL
- 5. WHERE POSSIBLE, NATURAL GROUND COVER VEGETATION SHALL BE MAINTAINED FOR SILT CONTROL.

E. <u>CLEAR AND GRUB SITE:</u>

- I. CONTRACTOR SHALL CLEAR AND GRUB AREAS WITHIN THE CLEARING LIMITS SHOWN ON THE MITIGATION PLANS, WITH THE EXCEPTION OF FLAGGED EXISTING VEGETATION TO REMAIN. IN AREAS OF EXISTING VEGETATION, CONTRACTOR SHALL REMOVE BLACKBERRY AND OTHER INVASIVE SPECIES BY HAND, WITH MINIMAL DISTURBANCE TO THE EXISTING VEGETATION. CLEARED AND GRUBBED VEGETATION SHALL BE EXPORTED FROM THE SITE. INVASIVE/EXOTIC PLANT SPECIES TO BE REMOVED AND TREATED IN THE MITIGATION AREA(S) INCLUDE: SCOT'S BROOM, ENGLISH IVY, HIMALAYAN AND EVERGREEN BLACKBERRY, REED CANARYGRASS, PURPLE LOOSESTRIFE, HEDGE BINDWEED (MORNING GLORY), JAPANESE KNOTWEED, THISTLE, AND CREEPING NIGHTSHADE. FOR REED CANARYGRASS, ROOTS SHALL BE REMOVED DOWN TO A MINIMUM DEPTH OF 12 INCHES.
- 2. TALASAEA CONSULTANTS SHALL DESIGNATE ANY ADDITIONAL PLANT SPECIES TO BE REMOVED PRIOR TO CONSTRUCTION.
- F. <u>SURVEY/STAKE/FLAG PROPOSED GRADES:</u> A LICENSED SURVEYOR SHALL SURVEY, STAKE, AND FLAG PROPOSED GRADES WITHIN THE MITIGATION AREA(S). GRADES SHALL BE STAKED AND FLAGGED AT 25' INTERVALS AND AT ALL HIGH AND LOW POINTS. TALASAEA CONSULTANTS SHALL APPROVE GRADE STAKING PRIOR TO EXCAVATION AND SHALL MONITOR DURING CONSTRUCTION.

G. STOCKPILE TOPSOIL:

- I. CONTRACTOR SHALL SALVAGE AND STOCKPILE TOPSOIL AT APPROPRIATE LOCATIONS ADJACENT TO MITIGATION AREAS.
- 2.IF TOPSOIL CONTAINS DEBRIS, OR IS DETERMINED UNSUITABLE BY TALASAEA CONSULTANTS, CONTRACTOR SHALL DISPOSE OF MATERIAL OFF SITE AND IMPORT SUITABLE MATERIAL.

H. EXCAVATE MITIGATION AREAS:

- I. CONTRACTOR SHALL EXCAVATE GRADED AREAS PER GRADING PLAN WITHOUT REMOVING GRADE STAKES. TALASAEA CONSULTANTS TO MAKE MINOR FIELD ADJUSTMENTS TO GRADING PLAN, AS NECESSARY, TO ENSURE PROPER FUNCTION OF THE MITIGATION AREA(S).
- 2. FILL SOILS PROPOSED FOR USE WITHIN THE MITIGATION AREA(S) SHALL BE SUBMITTED TO THE GEOTECHNICAL ENGINEER FOR ANALYSIS AND APPROVAL PRIOR TO USE, AND SHALL MEET ALL APPLICABLE SPECIFICATIONS FOR FILL SOILS PER THE PROJECT GEOTECHNICAL ENGINEER. IN AREAS OF FILL PLACEMENT, CONTRACTOR SHALL COMPACT SOIL IN LIFTS ACCORDING TO GEOTECHNICAL ENGINEERING SPECIFICATIONS. GEOTECHNICAL ENGINEER SHALL APPROVE ALL AREAS OF FILL PLACEMENT TO ENSURE ADEQUACY OF COMPACTION. CONTRACTOR SHALL BE NOTIFIED BY THE GENERAL CONTRACTOR AS TO WHO THE GEOTECHNICAL ENGINEER WILL BE.
- 3. UPON COMPLETION OF EXCAVATION, TALASAEA CONSULTANTS SHALL REVIEW AND APPROVE SUBGRADE IN RELATION TO ORIGINAL GRADE STAKES. IF GRADE STAKES ARE REMOVED PRIOR TO APPROVAL BY TALASAEA CONSULTANTS, AN AS-BUILT SURVEY WILL BE REQUIRED. THE AS-BUILT SURVEY, BY A LICENSED SURVEYOR, WILL INCLUDE ONE-FOOT CONTOUR INTERVALS WITH SPOT ELEVATIONS OF HIGH AND LOW POINTS, POND SURFACE ELEVATIONS, AND THE CREATED WETLAND BOUNDARIES.

4. AFTER SUBGRADE APPROVAL, THE CONTRACTOR SHALL REMOVE GRADE STAKES AND PROCEED WITH TOPSOIL AND HABITAT FEATURE PLACEMENT.

- I. INSTALL SNAGS UPON COMPLETION OF SUBGRADE EARTHWORK AT LOCATIONS DEPICTED ON MITIGATION PLANS. SNAGS SHALL BE ANCHORED INTO SUBGRADE A MINIMUM OF 25 PERCENT OF THE TOTAL LENGTH, AS DEPICTED IN THE PLAN DETAIL. TALASAEA CONSULTANTS SHALL APPROVE SNAG LOCATIONS PRIOR TO INSTALLATION.
- K. HABITAT FEATURES: PLACE HABITAT FEATURES UPON COMPLETION OF TOPSOIL PLACEMENT, AS DEPICTED ON THE MITIGATION PLANS AND DETAILS. TALASAEA CONSULTANTS SHALL APPROVE LOCATIONS PRIOR TO PLACEMENT.
- SNAG A MINIMUM OF 15 FEET OFF THE GROUND ON THE SOUTHEAST SIDE OF II. <u>DOWN LOGS:</u> TO CUT/BREAK DOWN LOGS, FIRST SCORE THE LOG AT THE DESIRED LENGTH BY MECHANICAL MEANS, THEN SNAP THE LOG AT THE SCORED LOCATION TO CREATE A NATURAL LOOK TO THE BREAK. TWIST

BROKEN ENDS TO DISGUISE SAW CUTS. HABITAT FEATURES THAT HAVE BEEN

IO. SWALLOW NESTING BOXES: ATTACH ONE NESTING BOX TO EACH INSTALLED

CUT SHALL HAVE NO BLUNT ENDS. 12.ROOTWADS: TALASAEA CONSULTANTS SHALL APPROVE LOCATIONS PRIOR TO INSTALLATION.

13.STUMPS: STUMPS SHALL BE SET UPRIGHT.

- 14.BOULDERS: IF AVAILABLE, BOULDERS SHALL BE PLACED IN PILES AT LEAST 2 ROCKS DEEP (5 ROCK MIN. PER PILE), IN A MANNER THAT PROVIDES BOTH PHYSICAL STABILITY AND LARGE INTERNAL VOIDS.
- L. <u>MULCH GRADED BUFFERS</u>: TALASAEA CONSULTANTS SHALL BE PROVIDED A MULCH SAMPLE PRIOR TO IT BEING DELIVERED TO THE SITE. NO BUFFER AREAS SHALL BE SEEDED.
- I. CONTRACTOR SHALL SPREAD MULCH OVER ALL GRADED BUFFER AREAS TO ACHIEVE A UNIFORM DEPTH OF 3 INCHES. NOTE: 3-INCH DEPTH IS THE MINIMUM AFTER SETTLING. IF MULCH IS INSTALLED BY BLOWER TRUCK IT SHALL BE INSTALLED AT A 4-INCH DEPTH TO ENSURE A MINIMUM 3-INCH DEPTH AFTER SETTLING.
- M. <u>GRADING INSPECTIONS:</u> PRIOR TO PLANT INSTALLATION, TALASAEA CONSULTANTS SHALL APPROVE ALL GRADING WORK, AND ALL STRUCTURE AND HABITAT FEATURE PLACEMENT. IF ITEMS ARE TO BE CORRECTED, A PUNCH LIST SHALL BE PREPARED BY TALASAEA CONSULTANTS AND SUBMITTED TO THE CONTRACTOR FOR COMPLETION. AFTER PUNCH LIST ITEMS HAVE BEEN COMPLETED, TALASAEA CONSULTANTS SHALL REVIEW THE PROJECT FOR FINAL

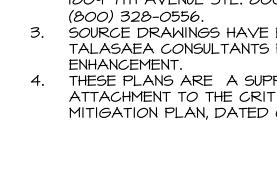
- INTERNAL ACCEPTANCE OF GRADING PLAN IMPLEMENTATION, AND PLANTING MAY THEN PROCEED
- N. SOIL STABILIZATION: IF THERE IS A DELAY IN CONSTRUCTION FOR ANY REASON, CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF EROSION CONTROL MEASURES, DRAINAGE, AND TEMPORARY IRRIGATION DURING CONSTRUCTION DELAY PERIOD, UNLESS OTHERWISE STATED IN WRITING.

<u>NOT FOR CONSTRUCTION</u> THESE PLANS HAVE BEEN SUBMITTED TO THE APPROPRIAT AGENCIES FOR REVIEW AND APPROVAL. UNTIL APPROVED, THESE PLANS ARE: SUBJECT TO REVISION



- 20300 WOODINVILLE SNOHOMISH ROAD NE, STE. A WOODINVILLE, WA 98072, (425) 821-8448
- SITE PLAN PROVIDED BY VIA ARCHITECTURE, 1809 7TH AVENUE STE. 800, SEATTLE, WA 98101
- SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL
- 4. THESE PLANS ARE A SUPPLEMENTAL ATTACHMENT TO THE CRITICAL AREAS STUDY \$ MITIGATION PLAN, DATED OCTOBER 2015

SURVEY PROVIDED BY TRIAD ASSOCIATES,



OK L O

10-23-20

AS NOTED Scale Designed AO Drawn ABS/OA Checked <u>AO</u> Approved BS

Project <u># 634C2</u>

Sheet # **M2.2**

CANDIDATE PLANT LIST

LARGE	TREES				
SYMBOL	SCIENTIFIC NAME	COMMON NAME	ML STATUS	SIZE (MIN.)	NOTES
•	ACER MACROPHYLLUM	BIG LEAF MAPLE	FACU	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
	BETULA PAPYRIFERA	PAPER BIRCH	FAC	5-6' HT.	SINGLE TRUNK, WELL BRANCHED
+	CORNUS NUTTALLII	PACIFIC DOGWOOD	FACU	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
	PINUS CONTORTA	SHORE PINE	FAC	4-5' HT.	B&B, FULL & BUSHY
	PRUNUS EMARGINATA	BITTERCHERRY	FACU	4-5' HT.	SINGLE TRUNK, WELL BRANCHED
+	/ PSEUDOTSUGA MENZIESII	DOUGLAS FIR	FACU	2-3' HT.	2 GAL., FULL & BUSHY
+	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	FACU	4-5' HT.	B&B, FULL & BUSHY
	THUJA PLICATA	WESTERN RED CEDAR	FAC	2-3' HT.	2 GAL., FULL & BUSHY
	THUJA PLICATA	WESTERN RED CEDAR	FAC	4-5' HT.	B&B, FULL & BUSHY
	TSUGA HETEROPHYLLA	WESTERN HEMLOCK	FACU	2-3' HT.	2 GAL., FULL & BUSHY
	TSUGA HETEROPHYLLA	WESTERN HEMLOCK	FACU	4-5' HT.	B&B, FULL & BUSHY

SMALL TREES & LARGE SHRUBS

SYMBO	0L	SCIENTIFIC NAME	COMMON NAME	ML STATUS	SIZE (MIN.)	NOTES
	×××	ACER CIRCINATUM	VINE MAPLE	FAC	4' HT.	MULTI-STEM (3 MIN.)
*	\searrow	AMELANCHIER ALNIFOLIA	SERVICEBERRY	FACU	24" HT.	MULTI-CANE (3 MIN.)
(CORYLUS CORNUTA	WESTERN HAZELNUT	FACU	4' HT.	MULTI-STEM (3 MIN.)
\bigcirc		HOLODISCUS DISCOLOR	OCEAN SPRAY	FACU	24" HT.	MULTI-CANE (3 MIN.)
		OEMLERIA CERASIFORMIS	INDIAN PLUM	FACU	24" HT.	MULTI-CANE (3 MIN.)
	,	PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	FACH	24" HT.	MULTI-CANE (3 MIN.)
		RIBES BRACTEOSUM	STINK CURRANT	FAC	24" HT.	MULTI-CANE (3 MIN.)
\bigcirc	_	RIBES SANGUINEUM	RED CURRANT	NL	24" HT.	MULTI-CANE (3 MIN.)
		SAMBUCUS RACEMOSA	RED ELDERBERRY	FACU	24" HT.	MULTI-CANE (3 MIN.)
		SORBUS SITCHENSIS	SITKA MOUNTAIN ASH	FAC	4' HT.	SINGLE TRUNK, WELL BRANCHED

MASSING SHRUBS

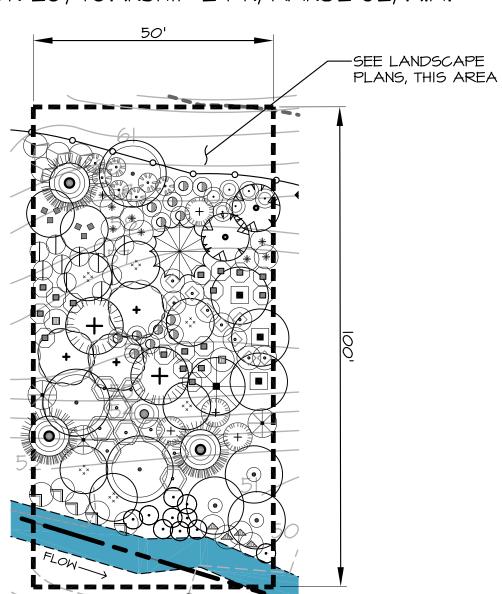
			ML		
SYMBOL	SCIENTIFIC NAME	COMMON NAME	STATUS	SIZE (MIN.)	NOTES
$\overline{\odot}$	CORNUS ALBA (SERICEA)	RED-OSIER DOGWOOD	FACH	18" HT.	MULTI-CANE (3 MIN.)
	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	FACU	18" HT.	FULL & BUSHY
	ROSA GYMNOCARPA	BALDHIP ROSE	FACU	18" HT.	MULTI-CANE (3 MIN.)
	RUBUS PARVIFLORUS	THIMBLEBERRY	FACU	18" HT.	MULTI-CANE (3 MIN.)
	SYMPHORICARPOS ALBUS	COMMON SNOWBERRY	FACU	18" HT.	MULTI-CANE (3 MIN.)
	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	FACU	I GAL.	FULL & BUSHY

GROUNDCOVER*

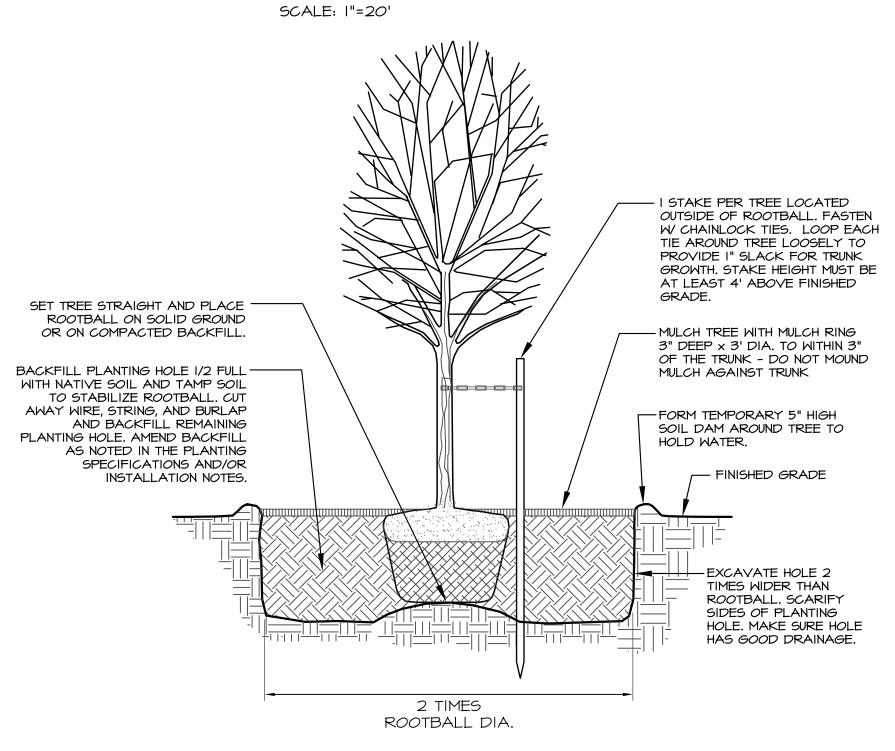
SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	SPACING	SIZE (MIN.)	NOTES
(NO SYMBOL)	GAULTHERIA SHALLON	SALAL	FACU	24" O.C.	I GAL.	FULL & BUSHY
(NO SYMBOL)	POLYSTICHUM MUNITUM	SWORD FERN	FACU	3' O.C.	I GAL.	FULL & BUSHY

* GROUNDCOVER SYMBOLS ARE NOT SHOWN ON PLANS - LOCATIONS TO BE DETERMINED ON FINAL MITIGATION PLANS

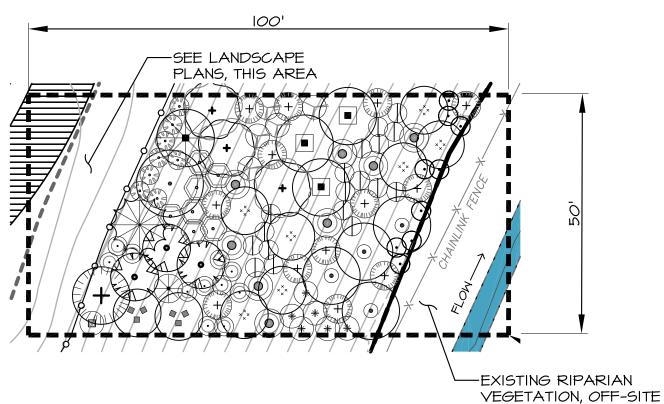
W 1/2, SECTION 20, TOWNSHIP 24 N, RANGE 6E, W.M.



PLANTING TYPICAL A



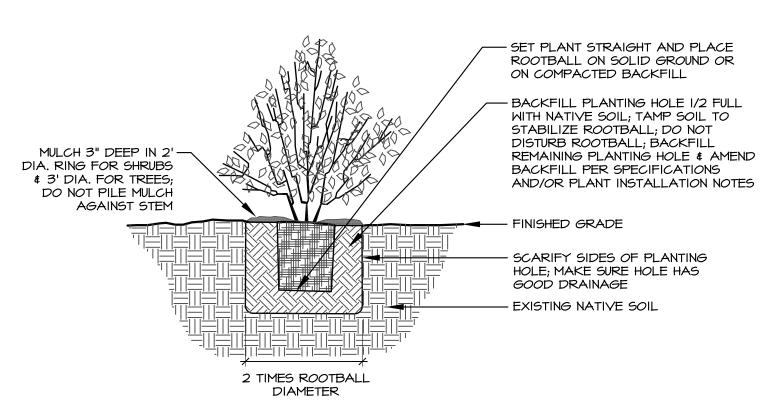
B&B TREE PLANTING DETAIL.



PLANTING TYPICAL B

SCALE: |"=20'

PLAN LEGEND



(2) CONTAINER STOCK PLANTING DETAIL N.T.S.

NOT FOR CONSTRUCTION

THESE PLANS HAVE BEEN
SUBMITTED TO THE APPROPRIATE
AGENCIES FOR REVIEW AND
APPROVAL. UNTIL APPROVED,
THESE PLANS ARE:
SUBJECT TO REVISION



Know what's **below.**Call before you dig.

- SURVEY PROVIDED BY TRIAD ASSOCIATES, 20300 WOODINVILLE SNOHOMISH ROAD NE, STE. A WOODINVILLE, WA 98072, (425) 821-8448.
- (425) 821-8448. SITE PLAN PROVIDED BY VIA ARCHITECTURE, 1809 7TH AVENUE STE. 800, SEATTLE, WA 98101
- (800) 328-0556. SOURCE DRAWINGS HAVE BEEN MODIFIED BY TALASAEA CONSULTANTS FOR VISUAL
- ENHANCEMENT.

 4. THESE PLANS ARE A SUPPLEMENTAL ATTACHMENT TO THE CRITICAL AREAS STUDY & MITIGATION PLAN, DATED OCTOBER 2015

AD NE, STE.

Becture,
We dolor

Betting

Betting

Bate

Date 10-23-2015
Scale AS SHOWN
Designed AO
Drawn ABS/OA
Checked AO
Approved BS

Project <u># 634C2</u>

Sheet # **M3.0**

GENERAL PLANT INSTALLATION NOTES

- I. PLANT TREES AND/OR SHRUBS I" HIGHER THAN DEPTH GROWN AT NURSERY.
- 2. FOR CONTAINER TREES AND/OR SHRUBS, SCORE FOUR SIDES OF ROOTBALL PRIOR TO PLANTING. BUTTERFLY ROOTBALL IF ROOT CIRCLING IS EVIDENT.
- 3. STAKE DECIDUOUS AND EVERGREEN TREES 4 FEET AND OVER IN HEIGHT WITH ONE (I) STAKE PER TREE. STAKE TREES IMMEDIATELY AFTER PLANTING. PLACE STAKE AT THE OUTER EDGE OF THE ROOTS OR ROOTBALL, IN LINE WITH THE PREVAILING WIND. STAKES SHALL BE LOOSELY ATTACHED USING CHAIN-LOCK TREE TIES TO ALLOW FOR SOME TRUNK MOVEMENT.
- 4. TREE STAKES TO BE VERTICAL, PARALLEL, EVEN-TOPPED, UNSCARRED AND DRIVEN INTO UNDISTURBED SUBGRADE. REMOVE AFTER ONE YEAR.
- 5. WATER PLANTS IMMEDIATELY UPON PLANTING, THEN PROVIDE MANUAL WATERING OR A TEMPORARY IRRIGATION SYSTEM (IF SPECIFIED IN THE PLANTING SPECIFICATIONS) TO PREVENT PLANT MORTALITY AND ENSURE PROPER PLANT ESTABLISHMENT. PLANTS SHALL RECEIVE A MINIMUM OF APPROXIMATELY ONE INCH OF WATER EVERY WEEK DURING THE DRY SEASON (GENERALLY JUNE 15TH OCTOBER 15TH, OR EARLIER OR LATER IF CONDITIONS WARRANT) FOR THE FIRST SEASON AFTER PLANTING. IRRIGATION AMOUNTS MAY NEED TO BE INCREASED DURING PROLONGED PERIODS OF HOT, DRY WEATHER.
- 6. FERTILIZE ALL TREES AND SHRUBS WITH A SLOW-RELEASE GENERAL PURPOSE GRANULAR FERTILIZER OR SLOW-RELEASE TABLETS AT MANUFACTURER'S SPECIFIED RATE.